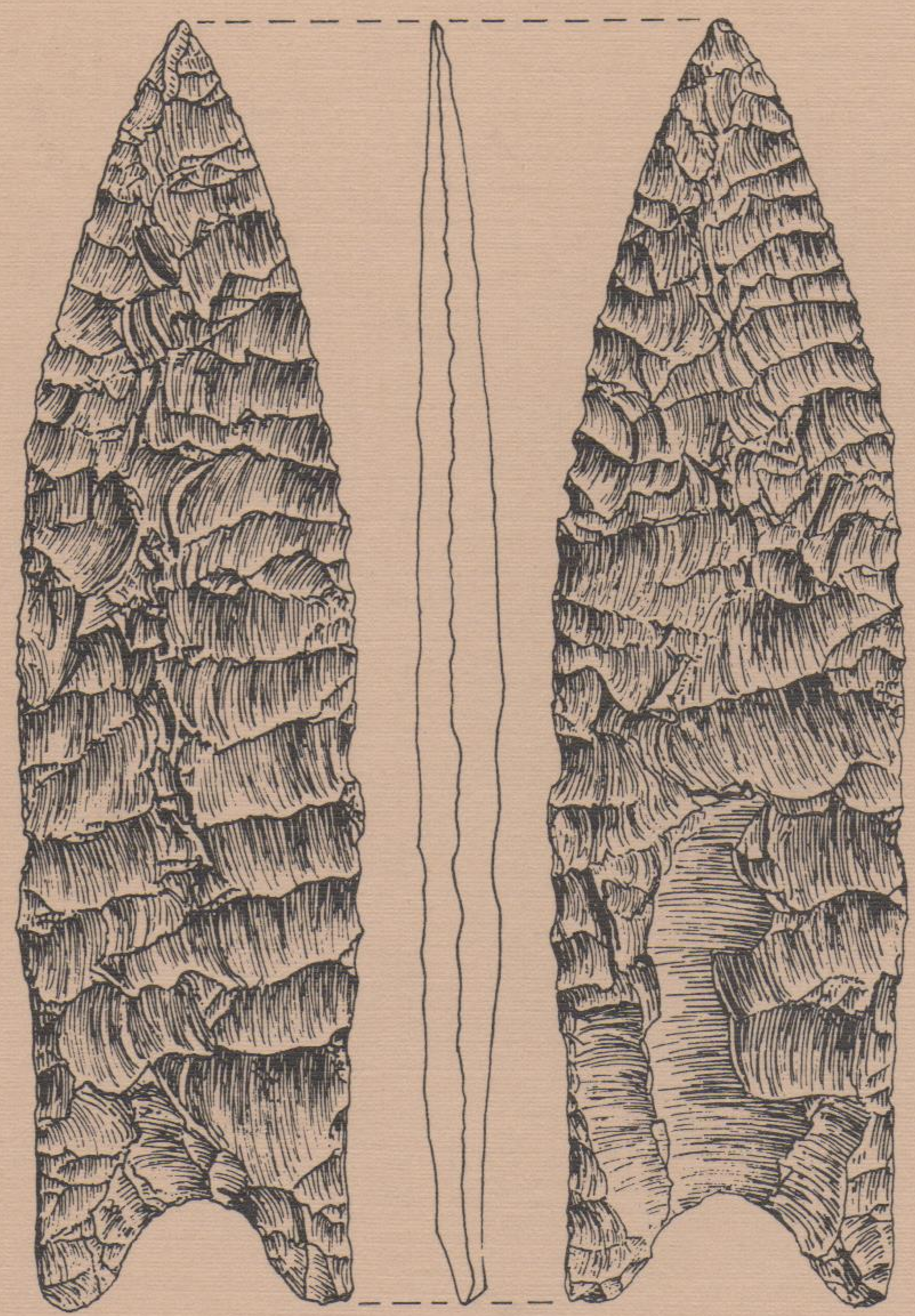
THE ARCHAIC PERIOD IN THE MID-SOUTH

Proceedings of the 1989 Mid-South Archaeological Conference

Memphis, Tennessee - July 15, 1989



Edited by

Charles H. McNutt

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MISSISSIPPI DEPARTMENT OF ARCHIVES AND HISTORY
Archaeological Report No. 24

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Series Editor

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Front cover: Dalton point recently excavated from the Olive Branch site, Illinois.

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Foreword

Charles H. McNutt
Editor

Having agreed to host the 10th Mid-South Archaeological Conference at Memphis State University, with the assistance of my colleague Gerald Smith, it was with some trepidation that I suggested we devote our discussions to the Archaic Period. Past conferences have typically focused on a culture-period theme and the Archaic was the only segment of local culture history that we had not dealt with.

The response to this suggestion was most encouraging and several of the papers in this volume will prove to be of interest to archeologists whose interests lie beyond or transcend the Mid-South. We are particularly fortunate to have received contributions from all conference participants for this volume.

The Mid-South conference is an informal affair—thus far it has truly been a "working conference." Such meetings are assuming increasingly important roles in the profession, as regional and national meetings are forced to go to shorter and shorter papers and increasing numbers of concurrent sessions. The Mid-South Archaeological Conference has neither annual dues nor registration fees. Hence, we are not only informal, but also impoverished. We have been particularly fortunate in securing assistance in publishing our proceedings, more often than not through the good graces of Patricia Galloway and the Mississippi Department of Archives and History. We have once more received help from this quarter and wish to acknowledge their assistance by dedicating this volume to them.

The Mississippi Department of Archives and History was able to complete the typesetting of this manuscript, but for reasons beyond Dr. Galloway's control it became necessary to print the document at Memphis State University. This, in turn, has required that this be a joint publication between the two organizations involved. Our original dedication is not subject to state budgets and policies, however; it remains firm.

1

Where's the Archaic?[1]

Stephen Williams

Of course, I am asking that question, "Where's the Archaic?," within the geographic range of my voice at this Mid-South Conference—that is the Lower Alluvial Valley segment of the Mississippi River. But the query has a much broader relevance than that narrow scope; after all it really all begins with Caleb Atwater in 1820 when, in his famous volume on the "Antiquities of the State of Ohio and other Western States," he illustrated a grooved axe from southern Ohio and compared it significantly with a similar artifact from Connecticut (Atwater 1820:235). Unwittingly Atwater had shown clearly and correctly that the Archaic of the Ohio Valley could be formally equated with the Maritime Archaic of the Atlantic Coast. It would be more than half a century till such good comparative analysis would be done again. Indeed, even today the importance of the strong Late Archaic manifestations in southern Ohio is often eclipsed by those in the northern part of that state. This point can be currently attested to in the Ohio Historical Museum exhibits in Columbus.

Within the Lower Mississippi Valley, in much more recent times—from the 1930s on—the focus of archaeology has rather understandably been on ceramic sequences. It was toward the development of this proven chronological tool that Ford would carry out, at Henry B. Collins' urging (Collins 1932), the classic surface collections and test excavations in Mississippi and Louisiana (Ford 1936). When Ford was joined in the Lower Valley by Griffin and Phillips in the Fall of 1939, it was a foregone conclusion that their joint focus would be on the establishment of a refined ceramic sequence. It was realized, of course, with the publication of *Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947* (Phillips, Ford, and Griffin 1951). In this noted volume they did not even *describe* the lithics that they found, much less worry very much about the Archaic. The truth is that the lithic collections procured by the Survey were not very impressive in scale or scope, to say the least.

William G. Haag, whose background in Kentucky with W.S. Webb made him especially sensitive to the Archaic period (Haag 1942), would later write an influential paper suggesting there was no Archaic in the Lower Valley to speak of (Haag 1961). Subsequently Haag joined up with Ford and Phillips on the Jaketown site report (Ford, Phillips, and Haag 1955), where a pre-ceramic Poverty Point complex would

[1] My special thanks to Charlie McNutt for mercilessly nagging me to finish this "loose end" of the program and to my LMS colleague, Jeff Brain, for reminding me of some LMS history.

be described for the Yazoo Basin. It seemed enough to have just that one early manifestation: Poverty Point.

Part of the problem and the reason for this apparent myopia was to be found in the then-current views about the geological age of most of the alluvial surfaces within the Lower Valley. The area's leading geomorphologist was LSU's Harold N. Fisk, and his work on channel correlations within the alluvial valley had been done with some advice from archaeologists such as Ford (Fisk 1944). Only Crowley's Ridge and some of the western lowlands were thought to have much chance of being of any great age. Morse (1969) has remarked on this same chronological problem. I well remember, while digging at Lake George in the late '50s, telling a youngster who showed me a huge Middle Archaic projectile point that it must have come from the Hills—I was quite sure there were no surfaces of that age anywhere nearby, but I was wrong.

But even by the late 1940s things would begin to change at the northern end of the Valley with Dalton points being recognized by Carl Chapman (1948) in Missouri. Griffin tells me that he thought that it would be nice to call these Meserve-like points "Dalton" after the Dalton brothers of Jefferson City, very respectable law-abiding collectors. He liked (Griffin, personal communication 1990) the amusing tie-in with the name of the notorious Midwestern gunslingers of an earlier period.[2] The intellectual history of the Dalton culture concept should be written up, but this is not the time or place.[3] However, I will allude to some other pertinent events in Dalton history later in this paper.

In the 1960s Jim Ford would carry out his somewhat ill-fated Dalton Survey (1961-62), the results of which would be presented by Alden Redfield (1970). Ford's work would have something of a ripple effect down the Lower Valley. Dan Morse (1969) would begin work in northeast Arkansas and somewhat later Jim Price in southeast Missouri would work on Dalton sites and their distributions (Price and Kracker 1975). Even further south Jeff Brain would also check in with significant Paleo-Indian and Early Archaic projectile points from the Yazoo Basin (Brain 1970). The strongly pressed search for really significant "Early Man" sites would come up quite empty in the Lower Valley—only a very few Clovis or putative fluted points. However surface collections continued to yield point types of Early and Middle Archaic times (Brain 1971:15-20; Williams and Brain 1983:350-351). Thus there was still something of an empty gap between Clovis-Dalton materials and Late Archaic Poverty Point.

Again, I believe there was a logical cause for this perceived missing data link. There just were not any very impressive sites known to plug that chronological hole: no spectacular kill sites or deeply stratified sites such as the ones in the Piedmont that Joffre Coe had used to unravel the staggering Archaic sequence of that area (Coe 1964). Where do we stand today, poised on the edge of a new decade? Not much seems to have changed *within* the Valley itself, although in a well-known northern alluvial basin, the American Bottom, the situation is now very different thanks to the I-270 project. The Lower Mississippi Survey has certainly looked for the Archaic and reported our meager findings, such as they are. When one calls a roll of those most earnestly engaged in such research, one thinks of Jim Price, Dan

[2] Griffin was in touch with Judge S.P. Dalton from October, 1945 on, as is recorded in seven separate donations of ceramics (limestone tempered cordmarked and plain wares) from the Jefferson City locality to the Ceramic Repository at Ann Arbor (1945-1954). It was through this early contact that Griffin learned about the distinctive Dalton points.

[3] A very good review of Dalton and its chronology is that by Al Goodyear (1982). I certainly agree with his view that Dalton is an horizon marker, although he fails to cite Williams and Stoltman (1965), where that suggestion was first made.

Morse, Jerry Smith, Sam Brookes, and Jay Johnson. That's about all; even with those searchers, large and important sites have been few and far between.

So what is the problem and how do we solve it? I think that it is mainly one of perception. It is our lack of knowledge of where and how to look. We also haven't understood the real value of the data that we already have at hand. After all, C.B. Moore did know about Poverty Point some eighty years ago; it took us quite a while to understand what he had really found there, despite his fine illustrations.

How do we cure our perception problems? Now almost all of my suggested solutions come directly from the teachings of James B. Griffin, my old mentor—I still learn a bit from him every time we take a trip together, as I did on our drive to this meeting here in Memphis.

1) **COMPARATIVE ANALYSIS**: you must see data in many areas to get a proper geographical perspective. There are long distance comparisons that are worthwhile as I pointed out at the beginning of this paper. The American Bottom is not that distant!

2) **STUDY OF COLLECTIONS**: you must see data from many sources: you must contact and see many collectors and their collections as well as all the local museums. They are the folks who have all the real data and the important leads to other materials.

3) **SITE VISITATIONS**: you must see your colleagues while they are out doing their thing. Learn special techniques and methods from them; visit their digs! This advice despite Stu Neitzel's cryptic comment about not liking to look at other people's holes.

If I may be forgiven a personal note, a trip that I took in the summer of 1977, after stepping down as Director of the Peabody, will serve as a good example of the value of these injunctions. Leaving Cambridge in mid-June, I began my "Tour de Sud-est" with a stop in Knoxville, where I had a grand tour of the Tellico Basin with Jeff Chapman, visiting sites like Ice House Bottom, Iddins and Bacon. There I saw the spectacular results of Jeff's backhoe testing survey that had found buried sites as deep as 17 feet. The Archaic was there, often deeply buried—he even found a new Late Archaic phase with *small* projectile points, contrasting with the larger Savannah River forms (Chapman 1985).

Next I visited Alan Toth, then State Archaeologist, at Baton Rouge. I spent Fourth of July with Ned and Lanier Simmons on Avery Island. There too I saw Walter McIlhenny and the LMS Petite Anse project was set in motion, to begin that Fall for two plus years with Ian Brown as Field Director (Brown 1980).

Next I took in the late sites of Fatherland at Natchez and Fort St. Pierre at Vicksburg, the latter being excavated by the Mississippi Department of Archives and History. Then I paid some personal visits to some old archaeological haunts of mine with a nostalgic return to Holly Bluff and my old buddy, Joe Stoner, who had been so helpful during our three seasons at Lake George. Returning to an even earlier research site, I stopped off to see Miss Francis at Nodena Plantation in northeast Arkansas where I'd studied the Hampson collection in the Fall of 1953.

My next stops were more professional: I spent time in Jonesboro, Arkansas, with Dan and Phyllis Morse, seeing the Zebree/Big Lake Phase collections and materials from the Armorel site too (Morse and Morse 1983). It gave me some ideas that would be transmuted during my visit with Jim and Cindy Price in Naylor, Missouri, into my Armorel phase hypothesis (Williams, 1980). When in southeast Missouri with the Prices I also saw a number of Powers Phase sites, including the type site where I met its owner Walter Kohler. At the other end of the time line, I also saw, near Naylor, a huge Dalton ceremonial point like that from the Sloan site in Arkansas.

I closed out my tour with a stop at Kampsville on the Illinois River, where I made a pilgrimage to the bottom of the black-plastic-lined "BIG PIT." My guide drew back the covers for me to "witness" the near-Dalton period lowest level. Stu Streuver was out of town. Overall, it was a very useful opportunity for me to reconnect with the field; my decade as Director was over and I could start to ruminate about archaeology all over again (Williams 1983). The great value of seeing all those sites and artifacts and meeting the collectors and excavators was very clear to me. I am now (July, 1989) on a similar two week junket, going from New Orleans to St. Louis with my traveling companion, JBG. By its end we will have seen six sites being excavated and met with numerous friends and colleagues. Some new ideas have been spawned on topics from Dalton to DeSoto. The only way to really know the data is to see the data.

So what is the answer to the question: "Where is the Archaic?" It is all around us and under our feet, if we work in the Lower Alluvial Valley of the Mississippi. How do I know this? Let me count the ways in some sort of personal chronological order:

1. At Nodena in 1953: the Island 35 Mastodon associated with a biface point blade and what I only now realize is a Dalton-like adze! (Williams 1957). In those early post-C-14 days I worried too about the age of the Archaic.

2. In my dissertation Introduction (Williams 1954) I included in my sequence chart two early phases: one for "Fluted Points" and the other "Bloomfield Ridge" for the Dalton materials (Morse 1969); this despite the fact that the main focus of the work was on Mississippian.

3. In southeast Missouri (1956) I met the Davidsons in Kennett and heard about Dalton points on old surfaces west of the St. Francis; then I talked with Howard Winters in Carbondale about his Daltons in the Cache River (Illinois) region. Later I also talked to James A. Ford, who, while he was digging at Helena Landing in 1960, had met some amateurs; they were working at the Lace Place in Arkansas. How did you think his Dalton Survey project began? My conclusions from these encounters concerning Daltons are to be found in the seldom-cited summary article by Williams and Stoltman (1965).

4. In 1977 I saw Jeff Chapman's deeply buried Tellico sites, as I have recounted above.

5. Back in the field again in the Boeuf Basin in the early '80s, I chatted very usefully with Roger Saucier in Winnsboro, LA. He emphasized to me the amount of alluviation the valley had received: "a drowned environment" with billions and billions of cubic feet of fill. What is it hiding? The Archaic, of course.

6. During the Boeuf Survey with T.R. Kidder I also met Mitchell Hillman at Poverty Point and learned of his interesting notion that, in parts of the Valley where there were hills or knolls, Clovis camp sites could be found in the lee or eastern side of these wind breaks. This situation does seem to be the case.

7. Just yesterday (July 14, 1989) I visited Poverty Point again and met David Griffin (no kin of you-know-who), Mitchell's replacement at the Museum. He showed me handfuls of early points that he had been surface collecting, including Daltons, San Patrice, Kessel, etc. from northeast Louisiana. Many of the Early Archaic points are made of exotic cherts. Jim Price had pointed out that same correlation to me in southeast Missouri, as did Jeff Brain long ago (Brain 1971:16).

8. At this meeting you in the audience are being exposed to brand new and very exciting data: Karl Vanhig has his extraordinary Clovis and Dalton materials from some quarry sites in Christian County, Kentucky, not 75 airline miles from the edge of the Lower Valley [these materials were on exhibit]. And Mike Gramly has his collections from the Dalton site (Olive Branch) that he is digging this summer at Thebes Gap, Illinois, at the northern end of the Alluvial Valley (Gramly, this volume). These are big sites with huge artifact assemblages; no longer can we gripe about small samples. Isn't their location telling us something rather important about where the main base camps are located? Mustn't we dig at the edges of the Valley where the rivers come in, like at the Coldwater, the Tallahatchee, and the Yalobusha?

In a comment afterward, Saucier said that, yes, that's where there would be successive fans of deposits which should yield stratigraphy. I would note that Joffre Coe found just such a situation at Doershuck in North Carolina: hence his Piedmont sequence.

So I would suggest to you that small meetings like the Mid-South have their place in letting us gain some direct experience with new data. Now we need to go out and dig deeper and look more broadly. And to those of us who have been condemned by our own choices (a 40 year sentence for me) to work in a perennially "flooded" environment, I say that the work has just begun; the PaleoIndian and the Archaic are right here under our feet.

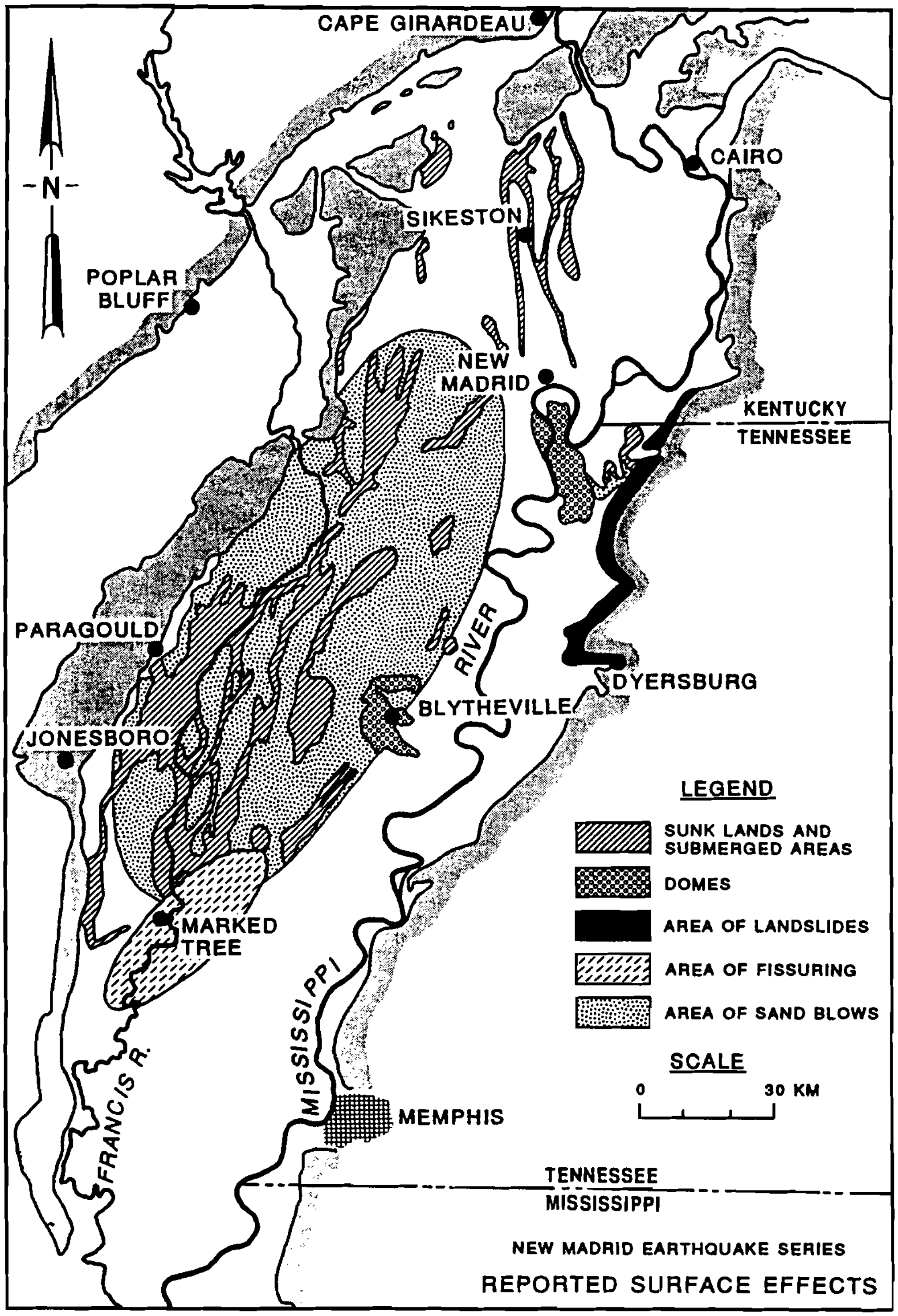


Figure 1. Reported surface effects of the 1811-1812 New Madrid Earthquake Series (after Fuller 1912).

2

Have You Seen any Good Archaic Earthquake Cracks Lately?

Roger T. Saucier

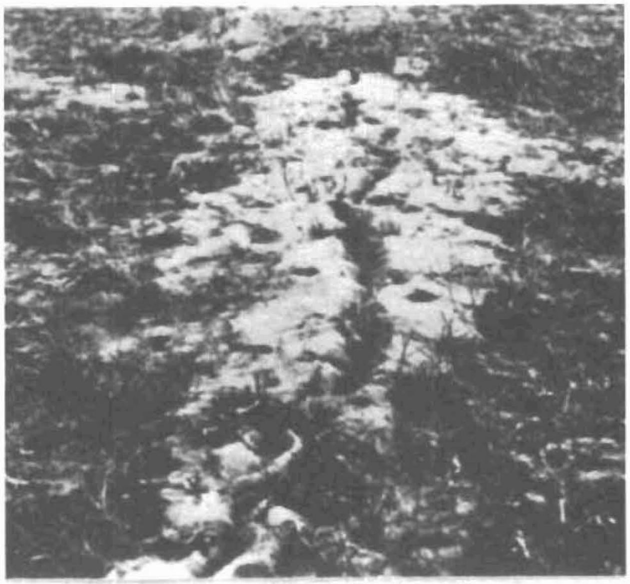
INTRODUCTION

It is now commonly accepted that geoscientists (geomorphologists, geologists, pedologists, etc.) are a vital part of modern archeological investigations and can make significant contributions to understanding man/land relationships. This is especially true in a landscape like the Lower Mississippi Valley where nature has been as dynamic as culture, or more so. In this presentation, I want to focus on an aspect of multidisciplinary endeavor that few give much consideration to, i.e., how archeologists can make significant contributions to the geosciences—in this case, seismology.

THE EARTHQUAKE

As the narrative accounts relate, it was a dark and stormy night on the Mississippi River in the wilderness of northeast Arkansas and southeast Missouri. According to the flatboat crews and scattered settlers, there suddenly came a cataclysm . . . the earth shook and rolled, trees crashed down, river banks caved, and the mighty Mississippi River itself ran backward and developed waterfalls (Fuller 1912). It was December 16, 1811. Regardless of how fanciful, exaggerated, and romantic some of the accounts might be, the fact remains that the region was struck by one of the most powerful and devastating earthquakes ever witnessed in North America (McKeown 1982). Several more huge seismic shocks and hundreds of lesser ones shook the region during the next several months and were recorded and described from as far away as Philadelphia, Cincinnati, Charleston, and New Orleans. Scientists now refer collectively to these extraordinary events as the New Madrid Earthquake of 1811-1812.

Fortunately, the region at that time was very sparsely populated and there were few deaths and injuries and little structural damage. However, the physical environment—the landscape—was dramatically affected and underwent significant modification and permanent deformation (Russ 1982).



HELENA, MONT
EARTHQUAKE OF 1935

SAN FRANCISCO, CALIF
EARTHQUAKE OF 1906

Figure 2. Examples from the literature of sand extrusion along fissures, and individual sand blows following major earthquakes.

THE REGION

The area of primary concern encompasses the Mississippi Alluvial Valley between Memphis, Tennessee, to the south and Cairo, Illinois, to the north. Between Crowley's Ridge to the west and the modern Mississippi River meander belt to the east, glacial outwash deposits of Late Wisconsin age (20,000 to 11,000 yrs B.P.) are areally predominant (Saucier 1974). These deposits consist of a thin layer of silty and sandy loam overlying a thick (greater than 15 m) mass of saturated sands and gravels (Saucier 1964).

Response of the ground surface to the earthquake series was first well documented by Fuller (1912) and consists of areas of uplift and subsidence, landslides along the bluffs bordering the Alluvial Valley, and widespread fissuring and sand blow formation (Figure 1). The latter two are closely related phenomena and are manifest over an area greater than 10,000 km^2 (Saucier 1977). Within the last two decades, their distribution has been mapped in considerable detail with the areas of most concentrated occurrence outlined and categorized.

SAND BLOW CHARACTERISTICS

Sand blows occur when water-saturated sands beneath a thin confining cohesive soil layer are exposed to seismic waves that cause pore pressures to rise. Within a short period of time, the sands undergo a process called liquefaction, the confining surface layer ruptures, and the water and sand violently extrude to the surface through vents and fissures. Thus sand blows are pseudo-volcanic features. During the New Madrid Earthquake, sand blows developed by the millions.

Sand blows have been observed shortly after formation in various parts of the world (Figure 2) and consist of sand ridges along ground cracks or small circular sand mounds around central vents. Plowing and other agricultural activities have muted or obscured nearly all sand ridges and mounds in the Alluvial Valley, but light-colored sandy areas in fields still mark their presence. These sandy areas show up clearly on aerial photos, giving rise to a distinctive speckled look to the landscape.

EFFECTS ON ARCHEOLOGICAL SITES

More than two decades ago, I became aware of reports of sterile sand horizons being encountered in archeological site excavations, usually as thin veneers overlying midden accumulations. This prompted me to search the literature, and I quickly encountered descriptions of more sterile sand layers and vertical or high-angle sand-filled fissures that were observed in test units. There are examples of sand-filled fissures following Mississippian-period wall trenches and even a highly dramatic occurrence of a human skeleton being offset by a sand-filled fissure (Figure 3).

When I plotted the results of my literature review (Saucier 1977), it became clearly evident that all occurrences of archeological site disturbance are associated with the mapped extent of 1811-1812 sand blows as determined from aerial photos and surface reconnaissance (Figure 4).

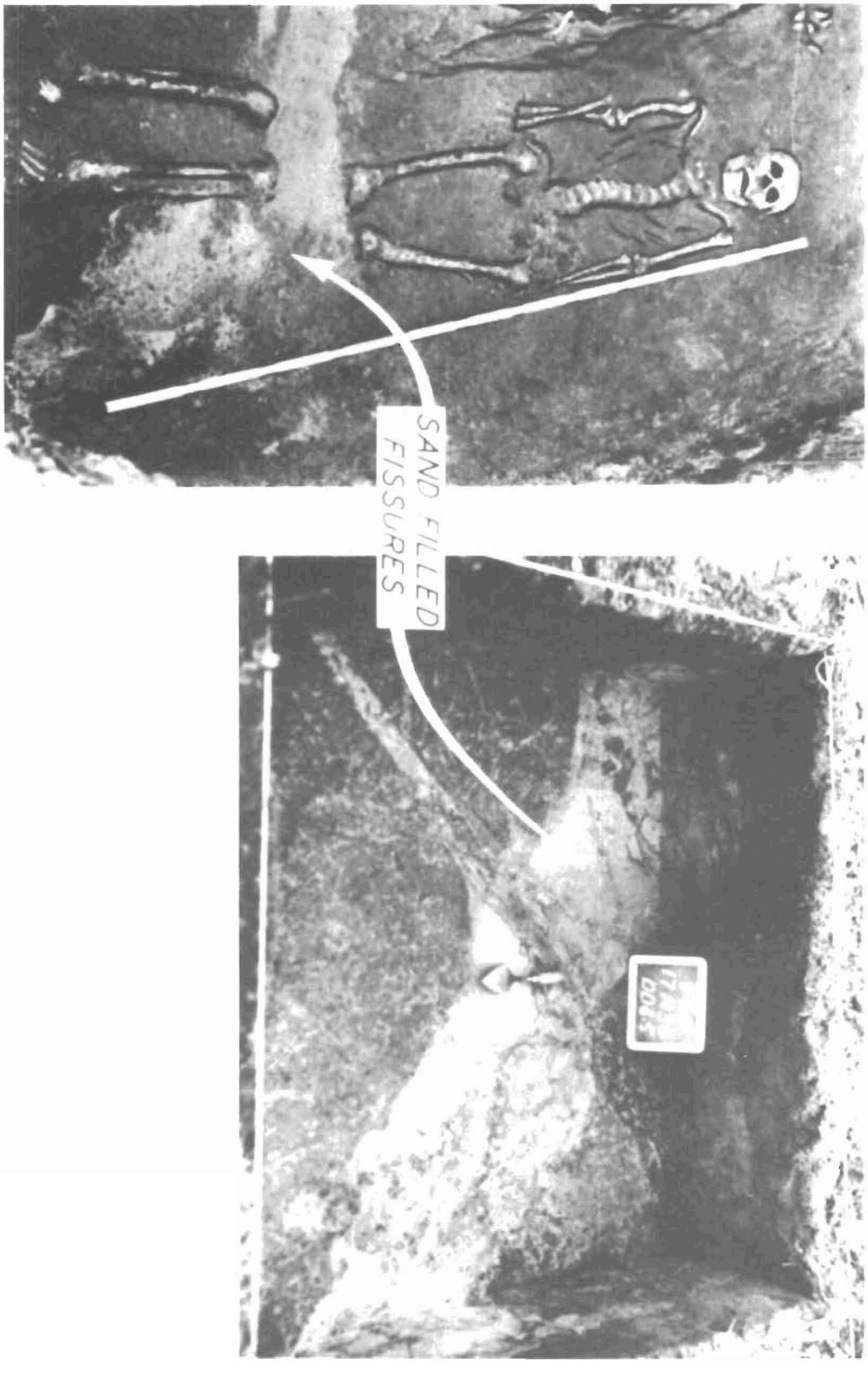
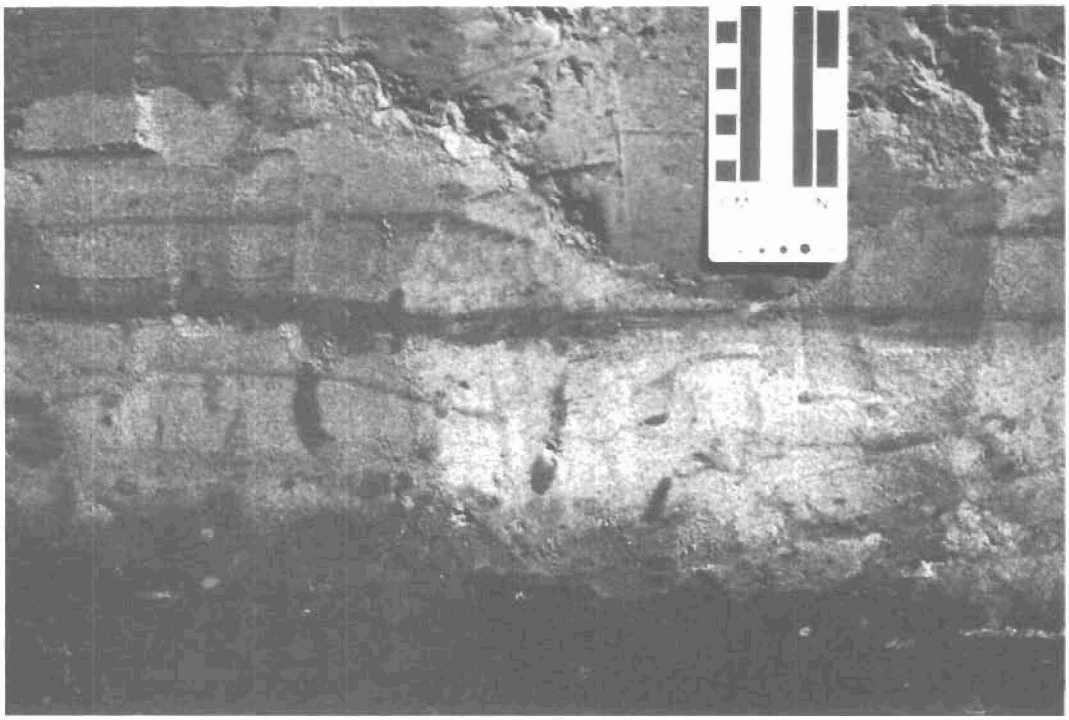


Figure 3. Examples from the literature of earthquake induced ground disturbance in archeological sites.



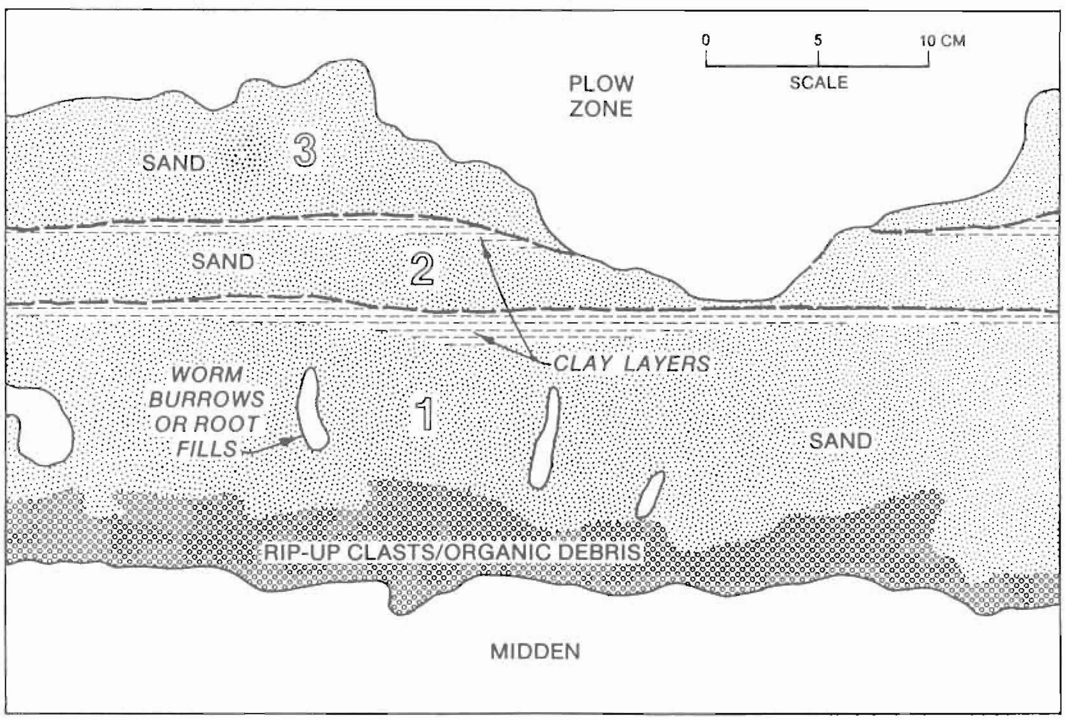


Figure 4. Photo and accompanying interpretation of layering in a mound of extruded sand around a sand blow at the Priestly Site.

IMPLICATIONS OF SAND BLOW DISTRIBUTION

From a geological point of view, cultural horizons in sites are valuable stratigraphic markers whose age can be determined with a relatively high degree of precision. Even when radiometrically dateable materials are not present, artifact assemblages normally provide a good estimate. Therefore, the age of sand-filled fissures and vents that interrupt cultural horizons can be estimated, at least in terms of maximum or minimum values.

An extremely important geological question—especially of significance to those many citizens of Memphis who live in proximity to the New Madrid seismic zone—is how often do earthquakes of the magnitude of the 1811-1812 events occur? Best scientific judgment suggests a recurrence interval of 600-700 years (McKeown 1982). If this is correct, most if not all of the sites in the region that were affected during the nineteenth-century events could also contain evidence of similar disturbance at an earlier date. Most prehistoric sites are old enough to predate at least two events if the estimated recurrence interval is correct.

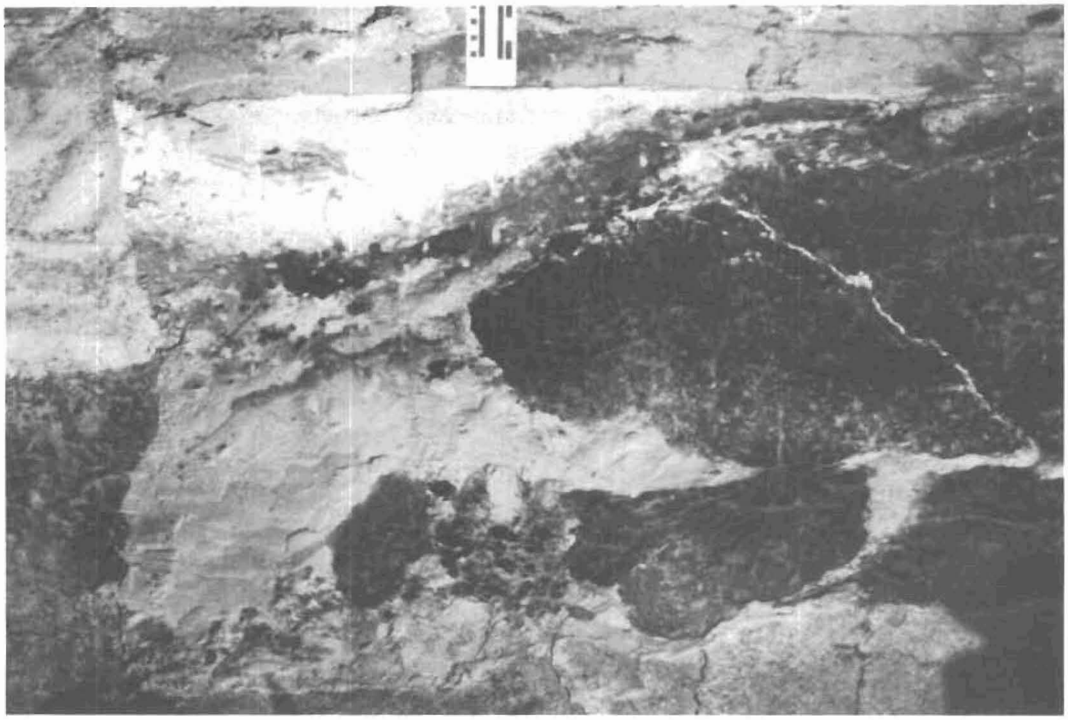
Alas, such is not the case! In every site that I have examined, there is evidence for only one set of sand blows and fissures. While no radiocarbon dates have been obtained, there is absolutely no evidence that any of the ground disturbance predates 1811-1812. Exploratory trenching by the US Geological Survey several years ago in northeast Arkansas exposed numerous vents, dikes, sills, and similar sand-blow related features, but no evidence of more than one earthquake series (Haller and Crone 1986). Thus, we can say we know what to look for and where to look, but so far we have not found it. Have we not looked enough, or is it just not there?

THE PRIESTLY SITE

Early last year, I had an opportunity to examine in great detail an outstanding example of sand blows at the Priestly Site. This site is a Late Woodland-Early Mississippian village located between Memphis and Jonesboro, Arkansas, near the small town of Trumann, Arkansas (Saucier 1989). Excavations were conducted by Dr. David Benn and his colleagues at Southwest Missouri State University under sponsorship of the Arkansas Highway and Transportation Department.

Stratigraphy and lithology of the glacial outwash (braided stream deposits) were ideal for sand blow formation and preservation; 10 sand blows were revealed in about 2,500 m^2 of stripped midden and 185 m of backhoe trench. Each sand blow had a sand-filled feeder dike, an eruptive vent (crater-like feature), and a mound of extruded sand. There was also a network of horizontal and low-angle sand-filled cracks (sills), some of which served to separate physically the 1 m-thick midden from the underlying 0.5 m-thick subsoil which overlies fine sand.

Near sand blows, midden disruption and cultural-feature disturbance can be appreciable. General site stratigraphy usually remains intact, but boulder-size blocks of midden may be dislodged and slumped into vents. Much midden material may be brecciated (broken into small fragments) and moved by water and sand like clay balls in a stream. This type of disturbance can be easily recognized when exposed in long trenches or stripped areas, but the excavators of scattered columns or occasional 1 m^2 units should be cautious! Confusion awaits those who cannot see the "big picture."



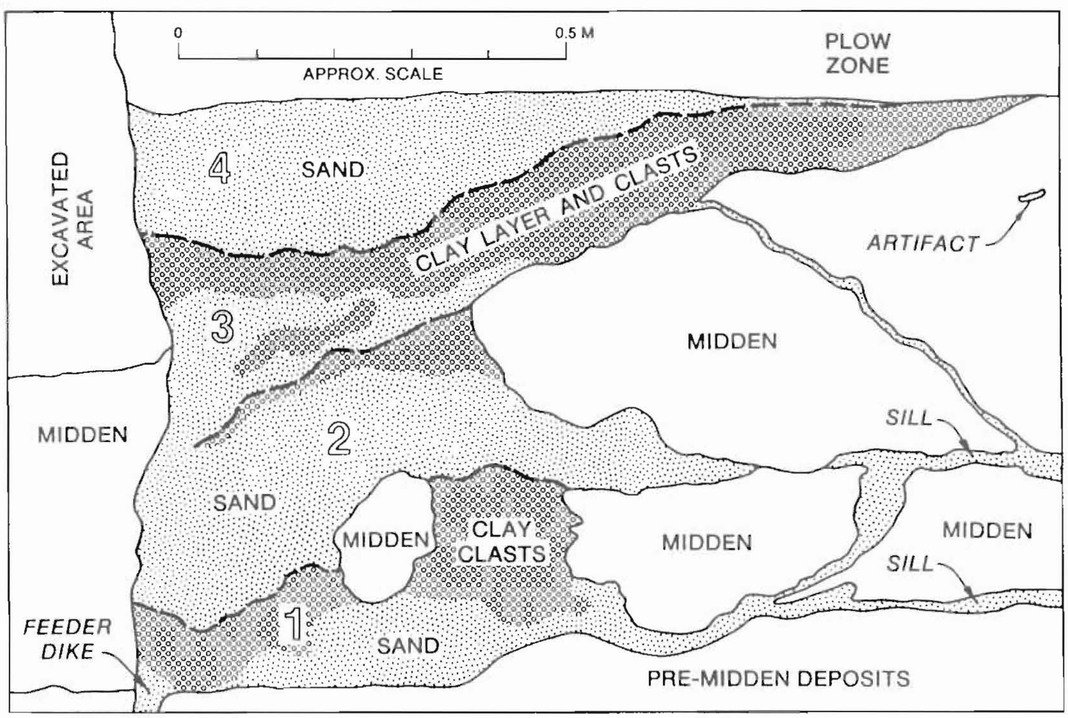


Figure 5. Photo and accompanying interpretation of extruded sand and fallback debris in an eruptive vent at the Priestly Site.

NEW INTERPRETATIONS

Priestly Site investigations yielded the first reported evidence of multiple episodes of sand extrusion through sand blows and fissures. Unfortunately, these apparently are not the widely separated events (600-700 yrs apart) that I have been searching for. Rather, they are the three major shocks that occurred on December 16, 1811, and January 23 and February 7, 1812. Actually, there were apparently two shocks on January 23 (for a total of four major ones in the series), but they were only a few minutes apart and can be considered as one in terms of sand liquefaction and sand blow development.

Two types of evidence indicate discrete, closely spaced periods of sand blow activity. One is stratification of the sand in mounds which indicates brief lulls (Figure 4) in their overall development. The second is zones of brecciated clay within eruptive vents that represent material that fell back into or were washed into the open craters during the brief lulls in activity (Figure 5). A lack of bioturbation in the clay zones and stratification is one indicator of the briefness of the overall sequence of sand blow development.

THE FUTURE

The Priestly Site evidence is conclusive that no sand blows formed, presumably because no major earthquake occurred, for at least 1,300 yrs prior to 1811-1812. This means that a) either earthquakes *did* occur but without the expected accompanying ground disturbance, or that b) the hypothesized recurrence interval is wrong. The former is much harder to explain than the latter based on what is known about large seismic events.

I personally believe that the Mississippi Alluvial Valley is devoid of evidence of *any* precursor of the New Madrid Earthquake during the last 12,000 yrs; however, this bold opinion is largely unsubstantiated. What is badly needed is evidence from one or more archeological sites that are considerably older. Ideally, I would like to see data from a site with continuous occupation from at least the Late Archaic through the Mississippian periods. This would provide several thousand more years of stratigraphic control for judging the age of either the presence or absence of sand blows. Attention archeologists: keep your eyes open and keep me informed!

3

Late Archaic Cultures on the Northern Periphery of the Mid-South

Thomas E. Emerson, Joyce A. Williams, and Paula G. Cross

INTRODUCTION

Critical to any discussion of cultural identity is the recognition of boundaries. Isolating factors that create boundaries gives insights into variables important to each culture's internal development. Tuck (1978) has suggested two factors contributing to the creation of boundaries: (1) the existence of an ecological shift leading to subsequent adaptations to differing biotic zones, while the other (2) is the use of differing communication/exchange networks. In order to recognize such boundaries it is necessary to delineate and organize those variables that "define" the various cultural entities.

In an effort to better understand Late Archaic cultures in Illinois, Tuck's model has been used to examine and interpret the data collected from numerous archaeological surveys and excavations throughout the state. Given the nature of existing data sets, we find projectile point types to be the artifact class most useful in distinguishing spatial extent. As a result, two major Late Archaic cultural patterns are recognized, the Interior Riverine peoples of middle and southern Illinois and the Lake Forest peoples on the northeastern border (cf. Tuck 1978). These cultural patterns will be described, focusing on the role of environment and communication networks in each.

ENVIRONMENT AND COMMUNICATIONS

The Lake Forest tradition is closely associated with the Great Lakes and their various drainage systems. Tuck (1978:30) sees this tradition as resulting from a cultural adaptation to the beech-maple-hemlock and maple-basswood forests that lie to the north of the southern mixed hardwoods and from a communication network that followed the Great Lakes drainage network eastward toward the St. Lawrence.

In contrast, the primary environmental settings occupied by the Interior Riverine peoples of the Late Archaic were the bottom lands of the major river valleys, such as the Mississippi, Illinois, Ohio and Wabash rivers and their tributaries. The lands surrounding these Interior Riverine peoples were characterized by extensive grasslands sporadically interrupted by stands of oak and hickory. Most important, however, are the large river systems. These systems all share a number of characteristics including bottomland forests, mesic and wet prairies, and marshes; a flat river floodplain marked by meander scars and some terraces; and numerous oxbow lakes and river channels.

The basic environmental differences between the Lake Forest and Interior Riverine adaptations were accentuated by the use of opposing communication networks. Lake Forest exchange and communication was sharply focused on the Great Lakes, their tributary rivers, and, ultimately, the St. Lawrence River. Conversely, the Interior Riverine peoples' major pathways included the great Mississippi and Ohio rivers to the south and west.

LAKE FOREST CULTURAL GROUPS

The cultural aspects of the Lake Forest tradition are present in their most flamboyant form during the latter portions of the Late Archaic (3000-1200 B.C.) with the presence of the "Old Copper" culture. Characterized by a diverse assemblage of tools manufactured from native copper and large numbers of side-notched points, evidence of these people is primarily confined to Wisconsin (Stoltman 1986:217-226). In Michigan (Lovis and Robertson 1989:231-231), similar side-notched points date to between 5000-2500 B.C. Tuck (1978) argues that the tradition begins with the actual movement of southern peoples into the area at about 3000 B.C. This movement is marked by the appearance of the large side-notched projectile point styles such as Godar, Osceola, and Raddatz, which have a wide distribution across much of Illinois, Wisconsin, and Michigan. The similarity of the Lake Forest cultures with those groups to the south, however, does not go beyond the point styles—the cultural assemblages and adaptations are clearly Lake Forest.

In Michigan, the Satchell phase, characterized by point styles related to the northern Broadpoint horizon, dominates the period from 2000 to 1000 B.C. Lovis and Robertson (1989:236-237) note that there are a number of point styles that appear in Michigan at about 1500 B.C. These styles include an unnamed Terminal Archaic Small Point phase (ca. 1500-500 B.C.) containing small notched points, a small expanding stemmed form which persists until about 700 B.C., and a Meadowood variant assemblage that lasts from about 1000-500 B.C.

The Late Archaic in Wisconsin (1200-800/1 B.C.) begins with the introduction of point styles similar to those associated with the Lamoka culture in the northeast. This is followed, perhaps, by the Red Ocher culture with its distinctive cache blades and turkey-tail points (Stoltman 1986:227-235). Little else, beyond a few diagnostic tool types, is known about these Lake Forest peoples on the northern border. In Illinois tool assemblages related to this tradition are confined primarily to the extreme northern and northeastern portions of the state bordering Wisconsin, Lake Michigan, and northwestern Indiana.

INTERIOR RIVERINE CULTURAL GROUPS

In the Interior Riverine Tradition during this same time period it is cultural heterogeneity and change, rather than homogeneity, that is the rule. In the remainder of this paper we will primarily outline the culture history, adaptive patterns, and communications as established for one such Interior Riverine area as typifying the larger whole. The area is the American Bottom, recently documented by the research of the FAI-270 Archaeological Mitigation Project (Bareis and Porter 1984). We will, however, discuss supporting evidence of similar cultural patterning in other areas of central and southern Illinois.

The American Bottom is that 450 km^2 segment of the Mississippi River floodplain in the vicinity of East St. Louis, Illinois. The diverse physiography of oxbow lakes, marshes, ridge and swale topography, and streams is reflected in the diversity of biotic communities. At least ten distinct terrestrial and aquatic communities have been identified. This lush floral and faunal habitat is abruptly circumscribed on the east by the high limestone bluffs that mark the beginnings of the upland tall-grass prairies and on the west by the main channel of the Mississippi River.

Prehistoric occupation and utilization of the areas in and about the American Bottom cannot be documented during Paleo-Indian times. This is true for much of Illinois. Little is known about the subsequent Early and Middle Archaic peoples' settlement patterns, systems, or subsistence base.

A recent review of all Archaic settlement patterns in the area (Emerson *et al.* 1986) noted that Early Archaic sites were concentrated in the uplands, suggesting a focus on that resource zone; site density decreases during the Middle Archaic. Late Archaic settlements demonstrate an increased focus on the terraces and floodplain of the Mississippi River, as people live in increasingly larger and denser groups. Similar patterns can be documented from other areas (e.g. Moffat and Yingst n.d.; Conrad 1986; Farnsworth and Asch 1986). Yet, this model may be too generalized. New insights were recently provided for Early and Middle Archaic settlement patterns by excavations at the Nochta Borrow Pit site (Higgins 1988), where Early and Middle Archaic occupations were found to be located on a sandy/clay ridge along the eastern margins of the floodplain.

Recent research has delineated four sequential Late Archaic phases in Illinois (McElrath *et al.* 1984). From earliest to latest ([uncalibrated] dates given as revised in Emerson *et al.* 1986) these are Falling Springs dated from about 3000 B.C. to 2300 B.C., Titterington from 2300 B.C. to 1700 B.C., Labras Lake from 1700 B.C. to 1100 B.C., and the Terminal Late Archaic Prairie Lake Phase dating from about 1100 B.C. to 600 B.C. It is the later two phases of the Late Archaic that epitomize the Interior Riverine Tradition in Illinois and which will be the primary focus of this discussion.

The Falling Springs phase represents the earliest Late Archaic occupation in the American Bottom sequence. As originally proposed, Falling Springs (McElrath *et al.* 1984) was thought to relate to the Helton phase. As defined by Cook (1976), the Helton phase dated to about 3500 to 3000 B.C. and characteristically included the Karnak Stemmed and Matanzas point styles. The excavations and analysis at the McLean site have cast some doubt on the Falling Springs-Helton equation (McElrath 1986). The McLean site is located on the bluff edge in the highly dissected uplands adjacent to the American Bottom. Excavations revealed 161 Archaic pit features arranged in two long narrow bands along the sides of a ridge. McElrath (1986) determined, during analysis, that dense material clusters were found to correlate with the pit distributions to form four activity areas around the central cleared ridge top. These may represent the domestic or work areas of a socially segmented group.

Subsistence information is poor, but nut remains are common at McLean. Over 90% of the nut remains represent thick-shelled hickories, but other species such as butternut, black walnut, pecan, acorn, and hazelnut were present. Seeds were scarce. No faunal remains were recovered at the site, but the processing of meat and hides is inferred from the presence of scrapers and cutting tools. McElrath (1986) interprets the site as a seasonally reoccupied nutting and hide/meat processing camp. Little else is known about this phase since McLean is the only site at which a Falling Springs component has been excavated. The specialized nature of this component precludes generalizations about the nature of the entire phase. Surface collections do indicate, however, that Falling Springs sites are equally distributed between the uplands and bottoms (Emerson *et al.* 1986), indicating a diverse exploitation pattern similar to that of earlier times. The tool assemblage includes manos, pitted anvil stones, scrapers, bifaces, and projectile points. The prevalent point types are expanding stemmed, although a small number of side-notched forms similar to the Godar-Raddatz types also appear.

Based on recent work in West-Central Illinois, Conrad (1981) has argued that there is a Hemphill phase that separates Helton from Titterington. He has characterized this as a period when forms such as Godar, Raddatz, and Osceola are common. At McLean, the lack of any clear Helton phase diagnostics, the presence of some Godar and Raddatz-like points, and the late C-14 dates (2410 B.C. and 2650 B.C.) may indicate that this assemblage represents a local temporal equivalent of Hemphill (McElrath 1986). Point types such as Godar, Osceola, Raddatz, and Matanzas have a state-wide distribution at this time, though in southern Illinois they are most often said to be affiliated with the Middle Archaic (May 1982). Cultural similarities in point styles, as Tuck suggested above, are still strong at this time between the Lake Forest and Interior Riverine Traditions.

Falling Springs is followed by the best known and most widespread of the Late Archaic phases, i.e., Titterington. Dated to between 2300 and 1700 B.C., it is best represented in its classic form at the Go Kart North site (Fortier 1983, 1984). A suite of seven C-14 dates from the site cluster tightly between 2180 and 2070 B.C. Excavations revealed 124 pit features grouped into a number of discrete clusters spread along the bank of the river. In some cases these pits cluster around a central hearth, while in others they circle a central area that contains high densities of lithic debris and tools.

Go Kart North yielded a large tool assemblage that included grinding stones, hammerstones, mauls, pestles, metates, axes, celts, grooved weights, and other ground stone items. Chert artifacts were equally diverse, including numerous drilling, scraping, and cutting tools. The most spectacular portion of the assemblage includes the large distinctive Etley blades and the Wadlow-Sedalia knives. Several blade caches were recovered. While such caches have been associated with mortuary ceremonialism in other locations, there was no such association noted at Go Kart North.

The evidence for subsistence practices at Go Kart North were limited. Walnut and hickory nuts were the predominate plant remains recovered. Few other botanical specimens were noted, although the large amount of ground stone plant processing equipment indicates the importance of plant resources. White-tailed deer were exploited frequently, with bird and fish more occasionally found.

Cook (1986), in his recent overview of the Titterington phase subsistence, has argued that a dispersed harvesting economy utilizing deer, nuts, and mussels was practiced. While this may be true, Kay (1986) has noted that contemporaneous Nebo Hills and Sedalia peoples to the west in Missouri were practicing incipient gardening in conjunction with a diverse exploitation of mammals, birds, fish, and shellfish. It is not unlikely that such practices may have entered the American Bottom via their western contacts. Whichever of these subsistence patterns is appropriate for Go Kart North, it is clear that it supported a fairly dense, long-term settlement at the site.

The Sedalia and Nebo Hills analogies are especially apropos with regard to the American Bottom Titterington phase because it is clear that these phases are closely related. Sedalia and its variant Titterington are primarily adaptations to the prairie regions of Missouri (Chapman 1975) and typified by sites such as Booth (Klippel 1969) and Weimann (Bacon and Miller 1957), but they extend into the American Bottom, the lower Illinois River valley, and west central Illinois. Conrad (1981) refers to a Titterington Horizon in the central Illinois River valley based on the Etley Point type cluster; this appears to represent the northerly extent of this horizon.

The eastern distribution of the Late Archaic Titterington horizon/phase lies along the Illinois and Mississippi River valleys and their adjacent uplands. There is a marked eastward decrease in the numbers of large broad-bladed, straight-stemmed points recovered from surveys of the interior secondary rivers such as the Kaskaskia (Cross and Remley 1988) and the Sangamon (Roper 1979). In fact, the excavation of Titterington phase burial goods from the Airport Site (Roper 1978) is singular because of the absence of comparable materials on the Sangamon River. By the time one reaches the Wabash drainage the broad blades are completely absent.

Southward, the extent of Titterington is similarly abbreviated. A search of the archaeological literature for southern Illinois has failed to produce any Titterington assemblages. However, both May (1982) and Stemle (1981) give the southern range of the Etley point type as southern Illinois and perhaps the lower Ohio Valley—May (1982) does note that these diagnostic points are rare in the Carrier Mills area.

While the distribution of Titterington in Illinois appears fairly well known, there is some question as to its origins. In the lower Illinois River valley Titterington has been seen as an outgrowth of the preceding Helton phase (Brown and Vierra 1983; M. Wiant, personal communication 1986). In the American Bottom, however, it appears so distinct from the cultural entities that both preceded and followed that we have interpreted this phase as representing an actual population influx.

Recent excavations giving insights into the possible subsequent developmental history of the late or post-Titterington phase took place at the George Reeves site (McElrath and Finney 1987). A large lithic assemblage is available from this bluff-top base camp. Radiocarbon dated at 1760 B.C., this site contains an interesting collection of large stemmed, typical Titterington forms in association with large parallel to ovate sided blades with straight to contracting tangs. These latter forms have been defined as Mule Road points by McElrath (McElrath and Finney 1987), who notes that they closely resemble the contemporaneous Ledbetter points from the Mid-South. Late Archaic occupations associated with Ledbetter cluster points are common in Tennessee and the surrounding states (Faulkner and McCollough 1973:151-152), but their presence in the American Bottom had not been previously suspected. At present this point cluster has not been recovered north of the American Bottom and, to the south, only McNerney's (1975) survey of Cedar Creek yielded a single such point.

The subsequent Labras Lake phase dates from 1700 to 1100 B.C. and is probably the least understood part of the Late Archaic sequence. It is characterized by the presence of Riverton point styles such as Merom and Trimble. The Labras Lake site (Yerkes 1986, 1989) contains the first known examples of domestic structures in the American Bottom and appears to represent a fairly small, sedentary base camp. Subsistence activities are still focused on nut collecting and generalized hunting.

The Labras Lake phase of the American Bottom is poorly known, and only one component has been extensively excavated. The classic work of Winter (1969) on the contemporaneous and culturally similar Riverton culture of the Wabash provides a fuller panorama of lifestyles at this time. Riverton peoples fully exploited the available mammal, bird, fish, and shellfish resources through a series of seasonal linear shifts up and down the river valley. A noteworthy aspect of the system is the relative permanence of the large base settlements, which often included evidence for structures. While the Labras Lake settlement system is not identical with that practiced by Riverton people on the Wabash, the two systems are similar in that they both have an emphasis on bottomland resources and a tendency toward a permanence in settlements.

Culturally, the Labras Lake phase shows strong ties to the Riverton culture of the Wabash River valley. Winters (1969) ties the Riverton Culture to the Mid-South Archaic and suggests that it is intrusive into the Wabash and Cache River basins. The Labras Lake phase in the American Bottom seems to be an indicator of a similar influx of Mid-South influences into the Mississippi Valley. Surveys throughout southern Illinois indicate that the Riverton point styles are infrequently found as far north as the central Illinois River valley (Conrad 1981). They are primarily confined to the Wabash and its tributaries, but do occur in the extreme southern river basins emptying into the Ohio and the American Bottom (Cross and Remley 1988; Munson 1971; Harn 1971; Jefferies and Butler 1986). May (1982) recognizes the rare presence of Merom expanding stem and Trimble side-notched at Carrier Mills, but he refrains from using them as temporal markers.

The Prairie Lake culture represents the Terminal Late Archaic occupation in the American Bottom and southern Illinois. Dated to between 1200 and 600 B.C., there is more evidence for this cultural manifestation than for all the preceding Late Archaic groups. First recognized in the Prairie Lake phase of the American Bottom (Emerson 1980, 1984), similar groups have been defined as the McCraney Creek phase (Morgan *et al.* 1984) along the Mississippi River Valley south of Quincy, the Kampsville phase in the lower Illinois River valley (Farnsworth and Asch 1986), and the Logan phase on the La Moine River (Conrad 1986).

Prairie Lake phase sites in the American Bottom have been the most thoroughly studied. Quantitatively, there is more evidence for this phase than for all of the preceding Late Archaic phases combined (Emerson 1984; Emerson and McElrath 1983; McElrath and Fortier 1983; Emerson *et al.* 1986). An extremely tight C-14 chronology of ten dates brackets a 480 year period between 1070 and 590 B.C. Excavations of Prairie Lake phase components have taken place at five locations along the Prairie Lake Meander in St. Clair County. One of the most impressive areas was the Missouri Pacific #2 site (Fortier and McElrath 1983), where over 900 features were exposed, 600 of which were subsurface pits. These pits tend to occur in discrete clusters that may represent activity areas of family or work groups.

The tool inventory of Prairie Lake sites suggests a wide spectrum of activities. The assemblage includes grinding stones, axes, various drilling, cutting, and scraping tools, as well as more unusual objects such as hematite plummets and pestles, beads, cloudblower pipes, and gorgets. Farnsworth and Asch (1986) have identified the associated mortuary complex, which includes flexed, bundle, or cremation burials in small cemeteries usually located on blufftops. Grave goods may include plummets, projectile points, exotic minerals, and shell beads among other items.

The dominant hafted biface forms are triangular-bladed, straight-stemmed varieties (Dyroff and Springly types). A minor portion of the Prairie Lake assemblage contains small corner-notched, expanding stem forms that have been defined as Mo-Pac points. Prairie Lake point styles are referred to as the Springly point cluster in the central Illinois River valley (Conrad 1986) and Kampsville Barbed in both the lower Illinois River valley (Perino 1968; Farnsworth and Asch 1986) and the Sny Bottoms of the Mississippi River valley (Morgan *et al.* 1986). These distinctive Prairie Lake culture points appear in much of southern Illinois. While these points have been found on the lower Kaskaskia, they appear to be almost nonexistent on the Wabash River. However, researchers have been unable to recognize any specific cultural context for these types and have consistently included them in the amorphous Cypress Stemmed or Saratoga clusters (e.g. Higgins *et al.* 1984; Muller 1986; Webb *et al.* 1989; May 1982; Butler and Jefferies 1986). Until this problem is solved the nature of the terminal Late Archaic cultures of southern Illinois will be unresolved.

Another distinctive point type with Mid-South Late Archaic connections that infrequently appears in Prairie Lake culture sites are Motley points. Motleys have been associated with Poverty Point occupations in the Lower Mississippi Valley (Justice 1987). They have been reported in a Terminal Late Archaic context at the Range site in the American Bottom (Kelly *et al.* 1987) and by Winters (1967) in the Wabash River drainage. Motleys were interpreted in the Carrier Mills District as relating to the Late Archaic—Early Woodland transition between 2000 to 500 B.C. (May 1982).

A proposed settlement system for the Prairie Lake phase has suggested that these peoples lived on a permanent basis clustered within large base locales surrounding the resource-rich bottomland oxbow lakes (Emerson and McElrath 1983, Emerson *et al.* 1986). These lakes provided easily accessible waterfowl, fish, shellfish, tuberous plants, and other floral and faunal items as well as nuts and other products from the surrounding forests and bottomland prairies. From these base locales short-term extractive trips were made to exploit the surrounding floodplain and bluffs for specialized collecting purposes. Recently, squash remains have also been recovered from a small Prairie Lake residential extractive camp (Fortier 1986), indicating that horticulture may have been an important aspect of the subsistence system. By the Prairie Lake phase, territorialism and, potentially, tribalism may be identifiable in the archaeological record of southwestern Illinois (Charles and Buikstra 1983; Emerson *et al.* 1986).

The diagnostic straight stemmed, triangular point styles of the Prairie Lake phase are virtually identical to those of the Mid-South during Late and Terminal Late Archaic times. Most striking is the similarity of the Buck Creek Barbed points (Cook 1980; Seeman 1975) of the Ohio River area in Ohio, Indiana, and Kentucky and Crooked Creek points of Indiana (Tomak 1989). Lone Tree points from Indiana (Tomak 1989) also fit into this group. Such points are also closely related to the Wade cluster type in Tennessee dating between 1200 and 700 B.C. A number of similarities can be noted in Wade phase house forms, subsistence, burial patterns, and perhaps settlements (cf. Bentz 1986:133-142) that may relate to the Prairie Lake culture.

SUMMARY

In examining the Late Archaic cultures of the Interior Riverine adaptation as illustrated in the American Bottom groups a number of trends can be delineated. These trends, based on current information, appear to be universal for the entire Interior Riverine adaptive area. Whether these serve to distinguish their unique cultural identity from their contemporaneous Lake Forest neighbors to the north is speculative, given the lack of equally intensive survey and excavation in the northerly areas.

1) In the middle and southern Illinois area, there is an increasing utilization and occupation of the floodplain environs at the expense of the uplands. During the Falling Springs phase 81% of all base camps were in the uplands. This rises to 83% during Titterington times, but virtually no upland base camps are found during the subsequent Labras Lake and Prairie Lakes phases (Emerson *et al.* 1986).

As noted previously, it is difficult to correlate these environmental adaptations occurring in the Interior Riverine cultural area with those in the north. Lurie and Jeske (1988), in their investigations in McHenry and Cook counties of northern Illinois near the Wisconsin border, noted an increase in population and a shift from upland occupations to the borders of wetlands, swamps and river floodplains during the Late Archaic. This appears to parallel the southerly trend in reliance on floodplain resources and a more sedentary lifeway.

2) Accompanying this shift to the floodplain was a dramatic decrease in the degree of mobility. It has been argued in a number of other papers (Emerson 1980, 1984; McElrath and Fortier 1983; Emerson and

McElrath 1983; Emerson *et al.* 1986) that by Prairie Lake times sedentary lifestyles are well established in the American Bottom. It appears that increasing population density and competition brought about by environmental circumscription may have been critical factors in tilting the balance in favor of sedentism.

3) The Terminal Late Archaic also saw the probable appearance of territorialism, as evidenced in the presence of widely spaced, discrete Prairie Lake base locales in the American Bottom (Emerson *et al.* 1986) and in the mortuary data from the lower Illinois River valley (Charles and Buikstra 1983).

This increasing sedentism may in turn have provided the cause for the apparent increase in point style differences and a growing divergence of cultural attributes. The subsequent differing communication networks may indeed be the major focus of cultural change.

4) In review, there was a widespread distribution of the large side-notched projectile point types during the Falling Springs phase (3000-2300 B.C.) in the American Bottom and their apparent continued use in the Lake Forest area. The subsequent Titterington point types are brought into the area from the west and appear to provide the first distinguishing point styles in the Late Archaic which differentiates the Interior Riverine cultural material from the Lake Forest assemblage.

The late Titterington "Ledbetter" point styles and the Riverton forms of the Labras Lake phase shift our focus from west to south. By Prairie Lake the point styles are fairly distinctive. With the uncertainty of point types in southern Illinois, direct connections are difficult to make, but they certainly bear a close resemblance to the barbed straight-stemmed forms in the Mid-South. The appearance of the Motley point in Prairie Lake assemblages confirms a Mid-South connection. Throughout the Late Archaic sequence the major communication and exchange pathways of most of riverine Illinois were to the west and south.

The influx of Mid-South projectile point styles into the major river systems of the Interior Riverine area may represent either direct movement or diffusion of this southern culture into ecologically similar zones. As the distribution of the associated material culture shows, the greatest penetration of the northern area took place in those river systems most similar to those of the Mid-South. As these river basins narrowed, their potential to support this lifestyle decreases as does evidence of Mid-South cultural influences. As the archaeological record shows, this is a pattern that will be repeated often in the subsequent three millennia.

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4

Olive Branch: A Large Dalton and Pre-Dalton Encampment at Thebes Gap, Alexander County, Illinois

Richard Michael Gramly and Robert E. Funk

INTRODUCTION

This paper is a first report about research carried out at a culturally stratified, productive Early Archaic site on the banks of the Mississippi River in Alexander County, "southern-southern" Illinois. We have named it "Olive Branch" after the nearest town of any consequence (Figure 1). It might have been called the "Thebes site" as that old river town lies nearby, but we wanted to avoid giving the impression that we were excavating an Early Archaic Thebes component, which assuredly we were not. Also, the most commonly used chert at the site—Bailey Chert of Devonian age (Koldehoff 1985)—is a pleasing olive color.

We chose to excavate the Olive Branch site because there was hope of finding what has long been sought, *viz.* the proverbial stratified site bridging the Archaic and Palaeo-Indian periods. Such sites may be extremely rare because the basic economies of these periods may have differed radically, resulting in separate residential patterns. Yet, somewhere in North America the change had to have been made from a seasonally transhumant Palaeo-Indian lifestyle to a more settled Archaic existence manifesting familiarity with local terrain and resources.

Like many archaeologists, we have considered the possiblility that Archaic economy and technology developed in earliest Holocene times from Palaeo-Indian antecedents along the verdant, resource-rich floodplains of North America's major rivers—especially the Tennessee, Ohio, Missouri and Mississippi. In 1965 Williams and Stoltman presented their views about the heavy concentration of Dalton remains along the lower Tennessee River: "With the depletion of the herds of big game animals, new sources of food were sought, or more likely, old supplementary subsistence patterns were intensified in favorable localities. As a result the Dalton peoples laid the foundations for the subsistence pattern we are to recognize later as 'Archaic' in northern Alabama and western Tennessee and Kentucky." (1965:678).

Although archaeologists have achieved a reasonable understanding of variation in Dalton material culture through the exploration of caves, rockshelters and open sites such as Brand (Goodyear 1974) and Lace (Redfield and Moselage 1970) and now even know something about Dalton funerary practices

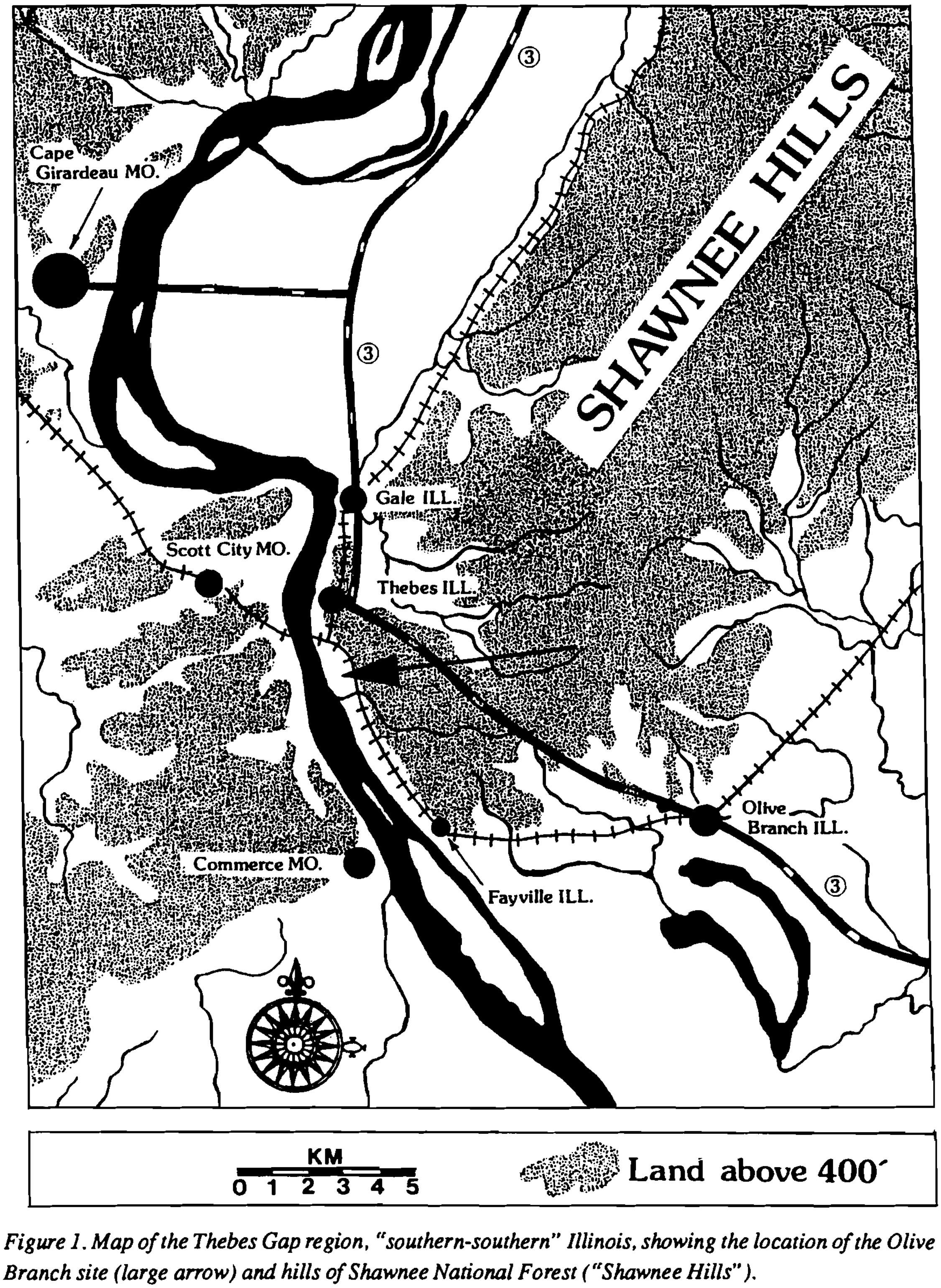

Figure 1. Map of the Thebes Gap region, "southern-southern" Illinois, showing the location of the Olive Branch site (large arrow) and hills of Shawnee National Forest ("Shawnee Hills").

(Morse and Morse 1983), information about economy and settlement systems is less satisfactory. It is time to focus attention upon the economy of Dalton and pre-Dalton cultures of the Lower Mississippi River Valley and environs and to substitute hard data for the refined guesswork that has been used frequently in culture-historical reconstructions until now. We are particularly intrigued with archaeological cultures immediately preceding Dalton because during that period important steps toward the development of a full Archaic lifeway (represented by Dalton culture) were taken. We had hoped to find an archaeological site containing abundant Dalton remains and still older materials in unmolested stratigraphic context; the Olive Branch encampment, we believe, is such a place.

LOCAL HISTORY AND GEOLOGY

Why there should be an Olive Branch site at all is self-evident with the benefit of our newly won hindsight. The encampment is located where the Mississippi's flow is confined to a defile through bedrock of the Ozark Plateau system. Along the gap, termed the Thebes Gap, the river has virtually no floodplain and bedrock is close to the surface. Thebes Gap extends for 6.7 miles between Gale, Illinois, and Commerce, Missouri. The archaeological site lies just downstream from the narrowest section, at the tip of a finger of alluvium that points to the beginning of the Lower Mississippi Valley. The site is 80-90 m away from the river's channel and 6 m above its level. Here the river is nearly bridged by limestone bedrock reefs known early in history as the Grand Chain. Before a channel was cleared for navigation, it was possible to ford the river without difficulty at low water. Mark Twain, however, had nothing good to say about this shallow, rock-strewn section and, recollecting his days as a steamboat pilot in *Life on the Mississippi*, he writes:

> Thebes, at the head of the Grand Chain, and Commerce at the foot of it, were towns easily remembered, as they had not undergone conspicuous alteration. Nor the Chain either—in the nature of things; for it is a chain of sunken rocks admirably arranged to capture and kill steamboats on bad nights. A good many steamboat corpses lie buried there, out of sight; among the rest my first friend, the Paul Jones; she knocked her bottom out and went down like a pot . . . (1917:211).

The limestone reefs of the Grand Chain, which rise out of the river on both banks, provide ideal traps for silt carried by floods, while at the same time these rocky bulwarks protect silt blankets and buried cultural deposits from lateral erosion by currents. Little wonder, then, that prehistoric remains awaited discovery in that locality.

Thebes Gap is an unusual stretch of the Mississippi River because of its pools and eddies and very strong currents. Such places are ideal for fishermen. Travelers on the river, especially in clumsy watercraft, might have found Thebes Gap hazardous, perhaps even requiring portaging under some conditions. As a portage, ford, or fishing place the area was (and still is) remarkably well suited for human settlement. In the Dalton period, reckoned to date as early as 10,500-9,900 b.p. (Goodyear 1982), conditions on the river may have been somewhat different from those of today. For such a remote period, the present may not be the "key to the past." Yet, if archaeological investigations at Olive Branch should demonstrate that Dalton economy was identical to the pattern of later hunter-gatherers (and fishermen), it may be assumed that the river behaved then much as it does today.

There are profound differences of opinion about the recent geological history of Thebes Gap. Some investigators doubt that the river flowed through there at all during Dalton times—preferring instead to

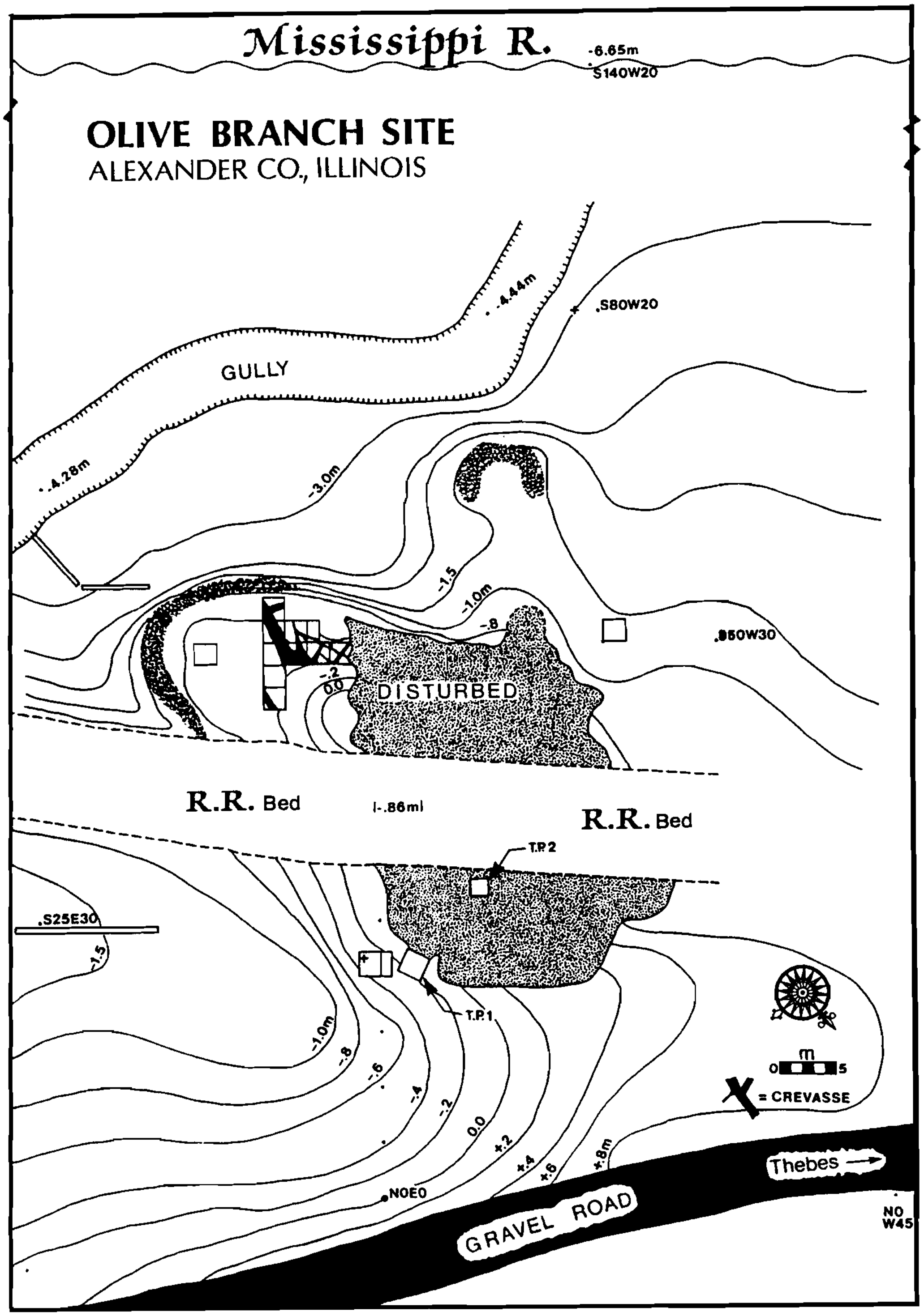

Figure 2. Map of the Olive Branch site showing excavated areas, current to July, 1989. Contour interval = 20 cm.

see a smaller watercourse flowing northward through the Gap and joining the Mississippi near Scott City, Missouri (Knox n.d.). As the proponents of this hypothesis would have it, the Mississippi River only began to flow southward in Thebes Gap 3000-6000 years ago. Other workers, however, feel that the Mississippi was diverted into the Gap at an earlier time—perhaps during the Late Pleistocene or early Holocene (Autin *et al.* 1989). As archaeologists, we are not experts on 100-, 50-, and 25-year floods, stream piracy, or the mechanics of river flow, and we prefer to leave such matters to specialists; yet, we think it important to note that our excavations produced pieces of vesicular, weathered rock that is able to float upon water. Judging by gross appearances, this substance appears to be a type of pumice or natural slag. One piece was large enough to have been used as an abrader, but most were very small. The smallest kernels were not likely collected by beachcombing Dalton Indians. Were this vesicular material pumice, it might be derived from the Yellowstone region where residues of volcanic events abound. Whatever its real identity, a source upstream on the Mississippi is suggested. To the south of Olive Branch in the alluvial lowlands or in the Ohio River drainage, no sources of similar vesicular rock or natural slag are known. Chemical tests and geochemical dating may help solve the mystery of origin. Long distance trade of the vesicular rock seems a remote possibility. Consequently, it seems most likely that this material floated into the site during floods, when the Mississippi was flowing past Olive Branch in the same direction and in the same manner as it is today.

The existence of the Olive Branch site came to our attention in 1984 when one of us (RMG) received a letter from two artifact dealers in Cairo, Illinois, offering for sale an extraordinary assemblage of Dalton points, including some clusters of very large specimens that were likely burial furniture. Similar letters had been sent to other museums, but most curators were skeptical about the authenticity of the artifacts. Through the good offices of Pete Bostrom of Lithic Casting Laboratory, Troy, Illinois, amateur archaeologist Kenneth Hill of Olive Branch, Illinois, and Dr. Douglas Sirkin of Buffalo, New York, Gramly was able to visit the site, whose location had been closely guarded.

With the aid of the Alexander County Sheriff's Office and the Union Pacific Railway, then the property owners, clandestine digging at Olive Branch was halted, giving us time to have a 20-acre parcel surveyed and property titles cleared. This parcel was purchased from Union Pacific and placed at the disposal of the Anthropology Division of the Buffalo Museum of Science for scientific research. According to D. Lightwine of the Union Pacific Railway, this transaction marked the first time his company had cooperated in the sale of land for archaeological exploration.

In 1987 a 2 m test-pit was excavated on the margin of an area that had been disturbed by artifact collectors. This unit was cleared with the help of volunteer amateur archaeologists of the New York State Archaeological Association and the Beau Fleuve Chapter of the Archaeological Society of Ohio. Work was halted at a depth of 130 cm below surface without reaching the bottom of the artifact-bearing deposit. A large volume of flaked stone tools and waste was unearthed, along with scattered flecks of wood charcoal, nut charcoal and minute pieces of calcined bone. The great age of the artifacts and the likelihood that cultural stratigraphy existed at this site prompted us to return in September, 1988, for 31 days of fieldwork. Financial support was forthcoming from the National Geographic Society (grant #3790-88), the Buffalo Museum of Science, and the L.S.B. Leakey Foundation of Pasadena, California.

The goals of the September fieldwork were to 1) clear the site of undergrowth and to map it, 2) test various sectors using both power machinery and hand-tools, 3) search for a sector with the thickest artifact-bearing deposit, and 4) seek and train a cadre of local volunteer excavators who would provide a pool of manpower for future fieldwork at Olive Branch. Along the way we hoped to encounter

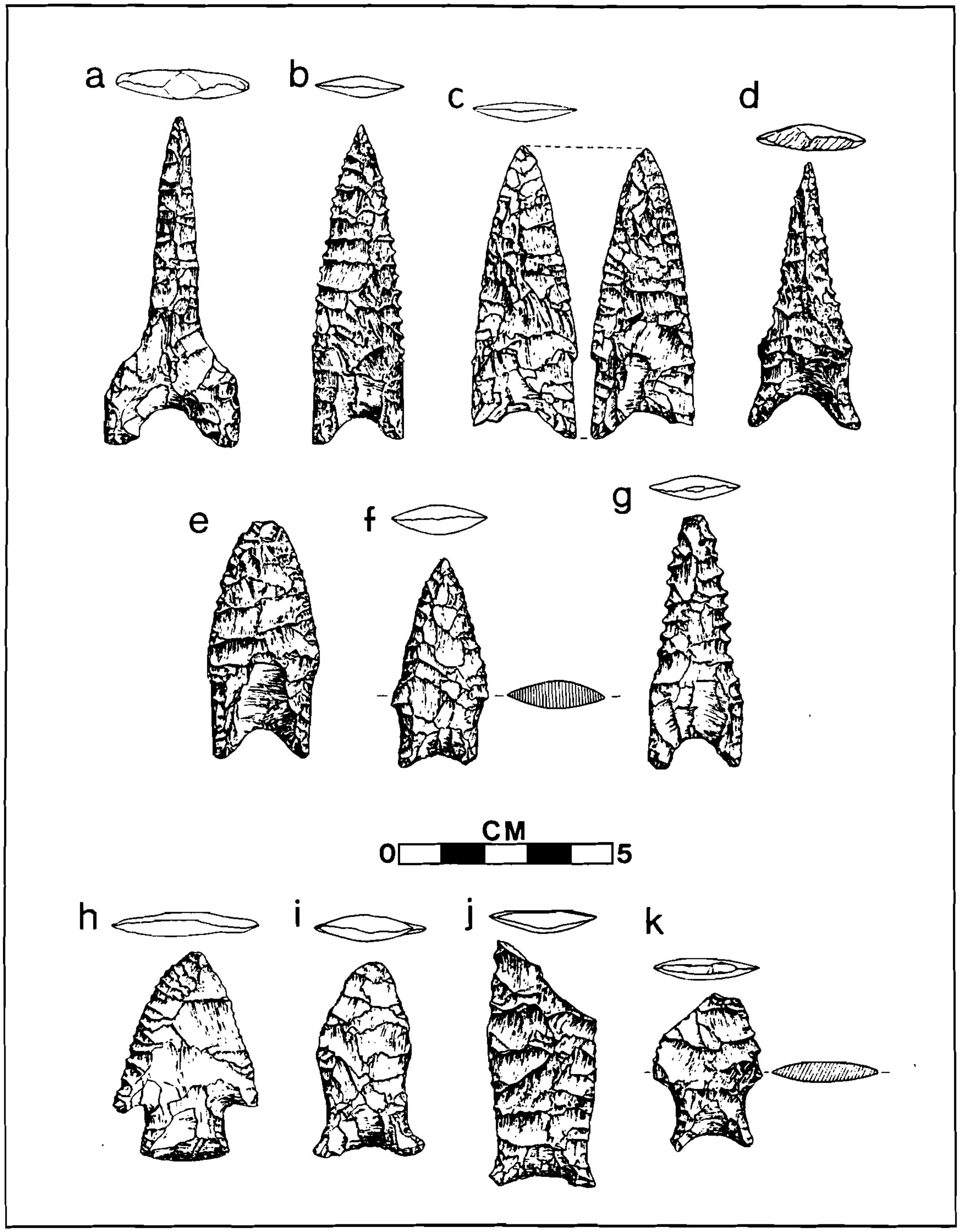

Figure 3. Selected projectile points and a drill from the Dalton zone at the Olive Branch site, Alexander County, Illinois. a-g, Dalton drill and projectile points in various stages of resharpening; h, Hardin point; i, Quad point; j, Beaver Lake point; k, untyped projectile point with pronounced stem having heavily ground margins. b, Burlington chert; all others, Bailey chert.

archaeological features, charcoal for radiocarbon dating, identifiable food remains, and artifacts diagnostic of specific periods and cultures. Due to time lost to inclement weather, it was necessary to reopen our excavations for a week in July, 1989. Although the part of the site with the densest accumulation of cultural remains has been tested adequately and mapped (Figure 2), sloping terrain below the adjacent bluff remains to be investigated. Dalton projectile points have been reported from the bluff immediately above the Olive Branch site (Caldwell and Caldwell n.d.) and at Thebes a few kilometers from the encampment (Webb *et al.* 1989). On the slope below the bluff conditions seem favorable for the presence of cultural horizons masked by colluvium.

At the conclusion of fieldwork all excavations were filled with timber and crushed stone and gravel. In addition, holes that had been dug by collectors were filled and leveled in order to discourage further depredations.

Two sectors of the Olive Branch encampment were particularly rewarding and will be the focus of future work, namely, a 2 m thick accumulation of artifacts north of the railroad bed that cuts across the site and the heavily crevassed or jointed limestone bedrock platform that borders the southern edge of the railroad bed (Figure 2). In the largest of the crevasses artifacts in appreciable numbers have been encountered as deep as 3.5 m below surface, and the base of the cultural deposit has not yet been reached.

Although some allowance will have to be made for disturbances created by the railroad cut and bed, it is highly likely that both sectors of the site can be linked with a continuous stratigraphic profile. This profile will extend for 30 meters from the southern edge of the bedrock platform to Test-pit 1 (Figure 2).

The Olive Branch site was farmed as recently as 1960 and a tilth zone was observed in Test-pit 1 and adjacent squares. The rock platform, however, seems never to have been cultivated. In the upper 20 cm of deposits, including the humus, numerous Woodland potsherds were recovered. No projectile points of the period or signs of prolonged occupation were encountered.

Early Archaic artifacts, chiefly Dalton points and associated unifacial and bifacial tools, occurred on the surface, within the tilth zone and humus, and below. Near Test-pit 1 Dalton artifacts ceased to be found at depths greater than 80 cm below surface; on the bedrock platform in the main crevasse Dalton points were noted as deep as 2.4 m below surface. The "Dalton zones" of both loci produced a few Early Archaic points of other types—Beaver Lake, Hardin, and Lost Lake, plus specimens that do not conform to any known type (Figure 3).

Immediately beneath the Dalton zone, from 80 cm to 110 cm below surface in the Test-pit 1 sector, we recovered a few fragmentary Quad points (Figure 4), unifacial tools, and debitage. The density of objects in the Quad zone is slight—hardly one-fourth the quantity by count or weight of the material in the overlying Dalton occupation. These statistics, which are derived from our small excavations, should be interpreted with caution. At this time it would be rash to argue that the nature and intensities of the Dalton and Quad occupations were significantly different for the site as a whole. A small charcoal sample assembled by C. Vance Haynes from the 100-110 cm spit yielded the result of 9975±125 years B.P. (AA-4805). This determination may be the first for a Quad horizon anywhere in North America (A. Goodyear, pers. comm.).

One of us (REF) excavated a quadrant of the 2 m square S22E2 (immediately adjacent to Test-pit 1) to the base of the cultural deposit. The last spit or arbitrary level that produced artifacts was 200-210 cm below surface (Table 1). Deposits were troweled and sieved for another 40 cm, to 2.5 m below surface, but results were negative. Also, no cultural materials were observed during coring through the floor of the excavated quadrant as far as bedrock, which was reached at 7.51 m below surface.

Although no culturally diagnostic artifacts were unearthed from 120 cm to 210 cm in the quadrant of the 2 m square S22E2, an oval biface (perhaps a knife or preform) was recovered *in situ* at 198 cm below surface. This find suggests that significant discoveries will be made below the Quad zone provided enough excavating is done. The identity of the pre-Quad occupants of Olive Branch can only be surmised at the moment. In this regard, it is worth remarking that a private collection of more than 500 projectile points from Olive Branch features two lanceolate points with heavily ground bases. These specimens conform in all their attributes to the Agate Basin type, which in the American West is relegated to the late Palaeo-Indian era.

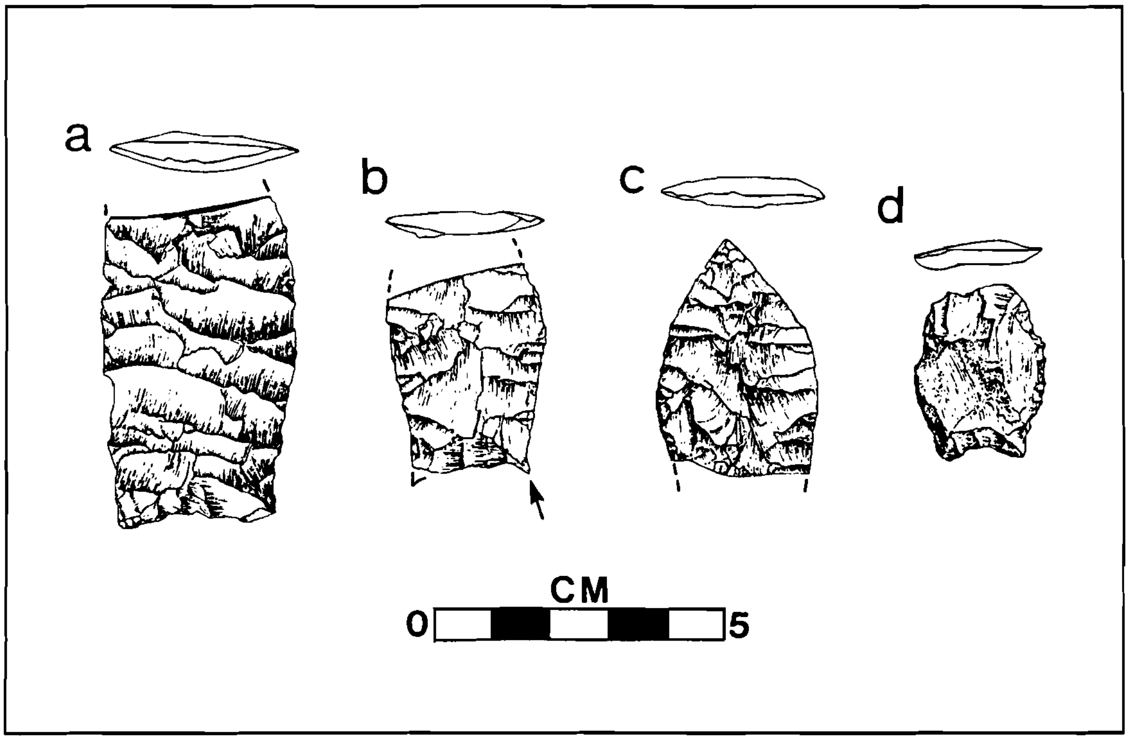

Figure 4. Artifacts from the Quad zone at the Olive Branch site, Alexander County, Illinois. a, projectile point in process of manufacture; b, fragmentary projectile point with graver spur at base; c and d, fragmentary projectile points (d is a cursorily shaped flake). All are fashioned of Bailey chert.

Most of our excavating at Olive Branch was carried out using 1/4" mesh sieves; one quadrant of the 2 m square S22E2 was processed with 1/8" mesh (Table 1). The extra labor of breaking down tough, compacted silt through fine mesh was well rewarded with the recovery of calcined bone bits in every 10 cm-thick unit to the 110 cm level. Calcined bone was particularly abundant in the heart of the Dalton zone. The distribution of calcined bone mirrored the abundance of fire-cracked rock. The tally of fire-cracked rock in S22E2 declined almost geometrically and disappeared altogether in the 100-110 cm spit (arbitrary level). Where calcined bone and fire-cracked rock were most abundant, charcoal was also most common. Fragments of nut charcoal, likely from walnuts, were observed in the Dalton zone of S22E2.

Zone	Spit and Mesh Size	Number	Weight (gm)
DALTON ZONE	1. 0-10 cm below surface, 1/4″ mesh*	3650	3741
	1/8″ mesh**	4329	1553
	2. 10-20 cm below surface, 1/4″ mesh*	4447	3484
	1/8″ mesh**	4223	1667
	3. 20-30 cm below surface, 1/4″ mesh*	3053	3175
	1/8″ mesh**	4948	1068
	4. 30-40 cm below surface, 1/4″ mesh*	2222	1984
	1/8″ mesh**	4230	852
	5. 40-50 cm below surface, 1/4″ mesh*	1861	1719
	1/8″ mesh**	3892	696
	6. 50-60 cm below surface, 1/4″ mesh*	2045	1658
	1/8″ mesh**	3358	502
	7. 60-70 cm below surface, 1/4″ mesh*	1906	1443
	1/8″ mesh**	3213	553
	8. 70-80 cm below surface, 1/4″ mesh*	1252	964
	1/8″ mesh**	1853	360
**			
QUAD ZONE	9. 80-90 cm below surface, 1/4″ mesh*	696	593
	1/8″ mesh**	787	131
	10. 90-100 cm below surface, 1/4″ mesh*	483	380
	1/8″ mesh**	149	98
	11. 100-110 cm below surface, 1/4″ mesh*	227	142
	1/8″ mesh**	175	45
**			
PRE-QUAD ZONE	12. 110-120 cm below surface, 1/4″ mesh*	91	80
	1/8″ mesh**	88	30
	13. 120-130 cm below surface, 1/4″ mesh**	22	17
	14. 130-140 cm below surface, 1/4″ mesh**	40	9
	15. 140-150 cm below surface, 1/4″ mesh**	14	3
	16. 150-160 cm below surface, 1/4″ mesh**	8	4
	17. 160-170 cm below surface, 1/4″ mesh**	1	17
	18. 170-180 cm below surface, 1/4″ mesh**	2	5
	19. 180-190 cm below surface, 1/4″ mesh**	7	2
	20. 190-200 cm below surface, 1/4″ mesh**	4	1
	21. 200-210 cm below surface, 1/4″ mesh**	1	1

Table 1. Tally of Debitage by count and weight in 2 m square S22E2, Olive Branch Site, Alexander County, Illinois.

**Three quadrants sieved using this mesh size.*

***One quadrant sieved using this mesh size.*

Calcined bone from the Dalton zone in S22E2 and the main crevasse of the bedrock platform was cursorily inspected. Only modern species appear to be represented. Deer, turtle, bird, raccoon, and drumfish have been recognized, suggesting that Dalton economy was adjusted to a wide menu of animal food. A sample of charcoal lumps recovered on window screening (1/16" mesh) from the 120 cm to 140 cm spit in the main crevasse was submitted for analysis and a variety of plants was identified. The charcoal was derived from walnut (nutshell), hickory, red and white oak groups, maple, elm, pine family, and grape (seed). These plants may be found in forest communities that exist in the neighborhood of Olive Branch today (Hutchison n.d.). Evidently the floral and faunal communities of the terminal Pleistocene epoch had given way to essentially modern associations by Dalton times.

Charcoal from the Dalton zone of the crevasse that had undergone botanical analysis was submitted to Beta Analytic of Coral Gables, Florida, for radiocarbon dating by the technique of tandem linear accelerator mass spectroscopy. A small sample from squares S50E6/E8 yielded the result 9115±100 years b.p. (Beta-32366, ETH-5671). This determination is corrected for isotope effects by measuring the C-13 content. Directly associated with the charcoal were Dalton points, flaked stone adzes, drills, abraders, and a variety of unifacially flaked tools.

The onset of the Dalton occupation at Olive Branch is surely older than 9115 years b.p., as Dalton points were unearthed to a depth of 2.4 m below surface in the crevasse—a full meter below the spit from which the charcoal was gathered.

I. Flaked Stone
- A. Bifaces (465)
  - a. Knives and preforms (242)
  - b. Projectile Points (187)
  - c. Drills and awls (36)
- B. Cutters (318)
- C. Sidescrapers (79)
- D. Endscrapers (40)
- E. Adzes (38)
- F. *Pièces esquillées* (12)
- G. Tool fragments (63)
- H. Debitage (199,049 items weighing 150.68 kg)

II. Rough Stone
- A. Hammer-anvils and hammerstones (21)
- B. Abradingstones (21)
- C. Nuttingstones (1)

III. Miscellany
- A. Ochre crayons (4)
- B. Potsherds (137)

Table 2. Artifacts recovered from all excavated units at the Olive Branch Site, Alexander County, Illinois, 1987-89. Objects were derived from 52 square meters of deposits (approximately 37 cubic meters of deposits).

ASSESSMENT OF THE SITE AND FUTURE DIRECTIONS

For what it has to say about the recent history of the Lower Mississippi River and the flowering of the Archaic way of life, the Olive Branch site is one of the more significant localities in the Midwest. Discoveries of dietary remains and absolutely datable cultural horizons should be of interest to a wide audience, as the Dalton archaeological horizon has been recognized in many states east of the Mississippi. Its apparent absence in some regions, such as eastern New York, New England, and Maritime Canada is an important problem for future research.

As highly revealing of Dalton lifestyle as the Olive Branch site promises to be, it may be even more noteworthy for its cultural-stratigraphic sequence. Large-scale excavations will be needed to lay bare the occupations that preceded the Dalton phase, as artifact abundance in the lowest zones appears to be low. Needless to say, we cannot ignore the opportunity to delineate the earliest phases of the Archaic way of life, which lasted over 7000 years. We may learn that the Archaic had taken root in the Lower Mississippi Valley when elsewhere in eastern North America and the High Plains the Paleo-Indian lifestyle was still actively pursued.

In terms of sheer productivity of artifacts (Table 2) Olive Branch may have no parallel. Years of destructive farming practices, erosion, and plundering by relic-seekers have exacted a heavy toll from midwestern Early Archaic sites. The Olive Branch site may be one of the last major Dalton encampments left for archaeologists to explore—all the more reason, then, to husband what has survived and to investigate the cultural record with care and precision.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to Dr. Douglas Sirkin for permitting us to camp upon and excavate his property and to Dr. Vance Haynes for his role in the 1988 fieldwork. Lucinda McWeeney rendered valuable service as archaeobotanist. We also owe a debt of gratitude to John Grimes, Associate Curator at the Peabody Museum, Salem, Massachusetts, for alerting us to the Olive Branch artifact collection.

Volunteer excavators who were especially generous of time and labor were: James Fell, Betty Knop, Richard Sojka, Cal Maginel, Stefana Paskoff, Donald Boyd, Ken Hill, Zygmunt Bieniulis, John McKendry, C.D. Cox, Paul Corbin, Marilyn Hahn, Preston McWhorter, Edie Baird, Margaret Beggs, Bob Norton, and Doris Rogers. Many other friends in New York, Ohio, Illinois, Missouri and Tennessee helped us in the pits and in other ways. Frank Cowan and Ron Cloud gave valuable demonstrations of their flintknapping skill and worked in the excavations. We thank them all.

Our neighbors in Thebes, Fayville, and Olive Branch, Illinois, showed us many courtesies and helped make our work pleasant and rewarding.

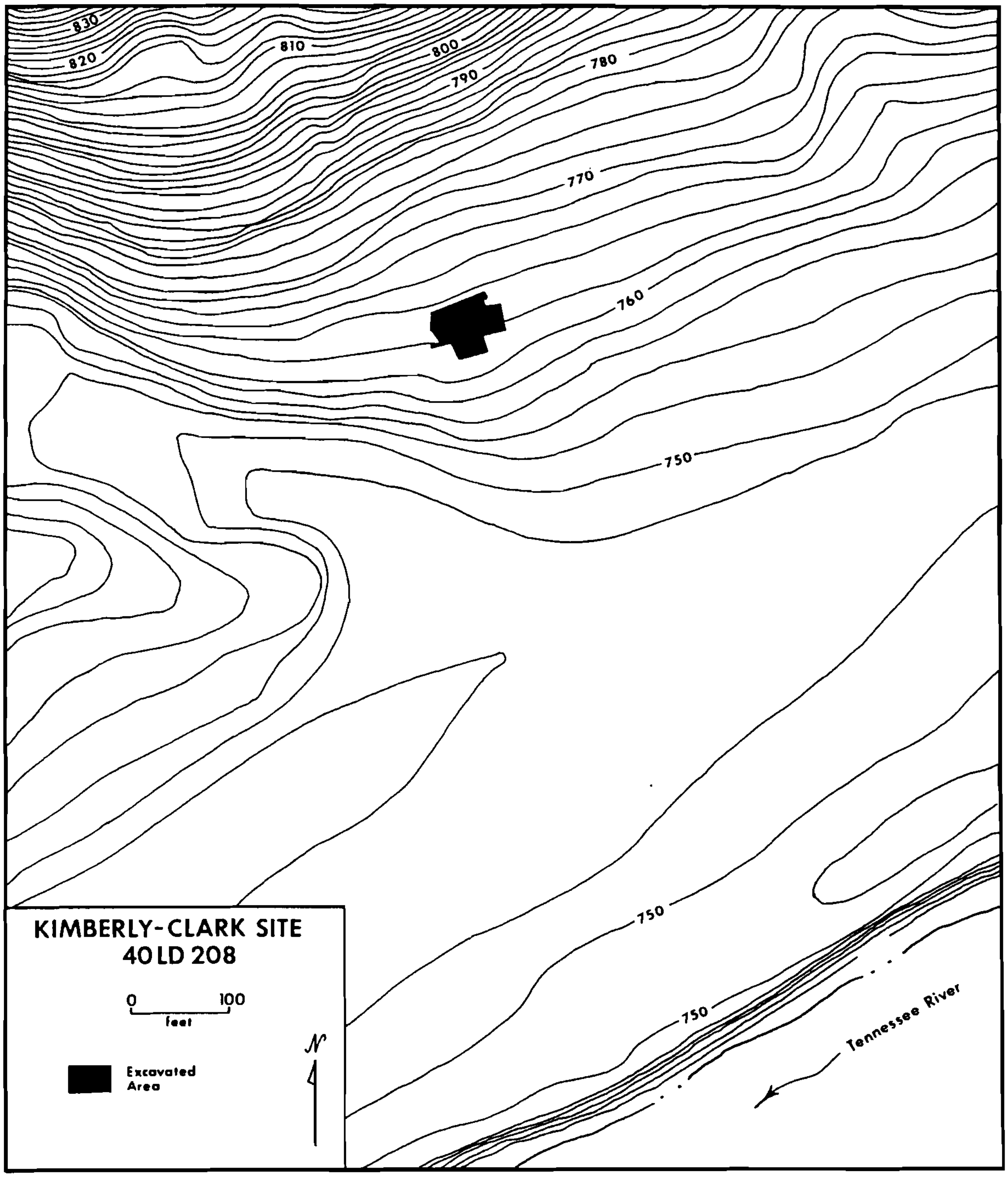

Figure 1. The Kimberly-Clark Site (40LD208), Loudon County, Tennessee.

5

The Kimberly-Clark Site: A Late Archaic Cremation Cemetery

Jefferson Chapman and Sue Myster

INTRODUCTION

In the 1981 Iddins report, I assessed our knowledge of Archaic burial practices in the Little Tennessee River valley as follows:

> Information on Archaic period burial practices is scanty for the Little Tennessee River valley. Two redeposited human cremations were recovered from the Icehouse Bottom site and were associated with the Kirk Corner Notched and Bifurcate Phases, respectively (Chapman 1977:112-115). A cremation thought to be associated with a Late Archaic period component was recovered at the Patrick Site (Chapman 1977:159).
>
> Three burials plus the four from the Iddins site seem to be a very low frequency of burials for the time span of the Archaic period and the number of sites investigated. Bone preservation is certainly a factor, but what is lacking completely from the archaeological record are pits capable of containing flesh inhumations. In that the cremations have all been redeposited, it may be that cremation and above ground disposal were the modes of disposal and the burial of the cremated remains may have only been an occasional circumstance.
>
> On the other hand, there is a possibility that burial took place on the fringe of the site where excavations were not conducted. We know that by the Late Archaic period, mortuary complexes had developed, sometimes involving cemeteries of cremated individuals—e.g., Peter Klunk Mound in Illinois (Perino 1968) and the Kohns Crisspen and Savich Farm sites in New Jersey (Richard Regensberg, personal communication). If such practices had earlier beginnings and were the mode in the Little Tennessee River valley, then the paucity in the archaeological record is due to our sampling (Chapman 1981:127).

Recent excavations at the Kimberly-Clark site (40LD208) in Loudon County suggest that cremation may indeed be the burial mode and that burial loci are peripheral to or removed from habitation areas.

THE KIMBERLY-CLARK SITE

The Kimberly-Clark site is situated on an older alluvial terrace remnant (T2/T3) of the Tennessee River at River Mile 590. The terrace abuts the upland slopes and is cut on the north, downstream end of the site by an unnamed branch. The topographic effect is a relatively level promontory overlooking the floodplain (Figure 1). The site was one of nine sites identified from a survey of the 230 acre Kimberly-Clark Industrial Plant area (Polhemus 1989); 40LD208 was within the impact area of site preparation so test excavations were conducted in April, 1989.

Even cultivated with maximum exposure, surface cultural material was scant, totalling 23 specimens. One shell tempered sherd, nine bivalve fragments and gastropods, and three fragments of calcined human bone suggested the presence of a possible Mississippian homestead. The plow zone was stripped from the area of surface shell indications, ultimately exposing an area of 297 m^2 (3200 ft^2). Skim shoveling and troweling delineated all plow scars and intrusions into the dark yellowish brown clay subsoil (Figure 2).

Subsurface features far exceeded expectations; 40 features and three structures were exposed and investigated. These represent two distinct cultural components and site usages.

The three structures apparently represent the successive rebuilding of a single Early Mississippian Hiwassee Island phase farmstead. Such isolated structures are not uncommon on older terraces and upland valley promontories in East Tennessee (cf. 40MR50 [Polhemus 1977]). The last building phase at LD208 was radiocarbon dated at A.D. 1055±70 (GX14934). Floor fills and two refuse-filled depressions yielded a small Early Mississippian ceramic, lithic, and faunal assemblage.

Adjacent to the Mississippian structures was a cluster of small pits, most containing cremated human bone. Radiocarbon determinations of 950 B.C±80 (GX14937), 1025 B.C±80 (GX14936), and 1145 B.C±90 (GX14935) place these features in the Late to Terminal Archaic period.

Twenty-three pits contained redeposited cremated human bones. In some features the bone was concentrated and densely packed, in others it was diffuse within the pit fill. An additional five pits contained no visible bone, but are probably burial pits as well. The pits are small, averaging 41.8 cm (1.4 ft) in length, 35.8 cm (1.2 ft) in width, and 18.8 cm (0.6 ft) in depth; plow truncation has obviously affected the latter. The fill from all pits was waterscreened through windowscreen mesh. Charcoal for radiocarbon dating was floated from the fill.

The cremated bone from each of the pits was analyzed by Myster for minimum number of individuals, age, sex, and presence of pathologies. Analysis focused on material retained in a 1/4 inch screen; these samples ranged from 0-496 g with a mean gram weight of 71.9. The finer residues were examined for identifiable elements. Additional observations sought data on possible body part selection for redeposition, the cremation of dry versus green bone, and differential burning patterns. It should be noted that each pit sample, although well preserved, was extremely fragmentary. Because many observations were indeterminate, observed patterns must be appropriately qualified.

There was a minimum of 24 individuals from 22 pits. A twenty-third pit contained a small amount of cremated bone that could not be positively identified as human. Among the individuals were 18 adults, 1 subadult, 2 infants (<2 yrs.), and 3 indeterminate. The two infants were each buried with an adult; all other pits contained the remains of only one individual. Two individuals were female; the remainder were indeterminate. No pathologies were observed. Where bone size was adequate, analysis revealed semilunar fractures, warping, transverse fracturing, and distortion indicating flesh or green bone cremation (cf. Baby 1954; Binford 1963; Chapman 1977).

There is nothing to suggest either pre- or post-cremation body part selection. In 16 features, cranial and long bone fragments comprise greater than 55% of the identifiable bone. The most complete

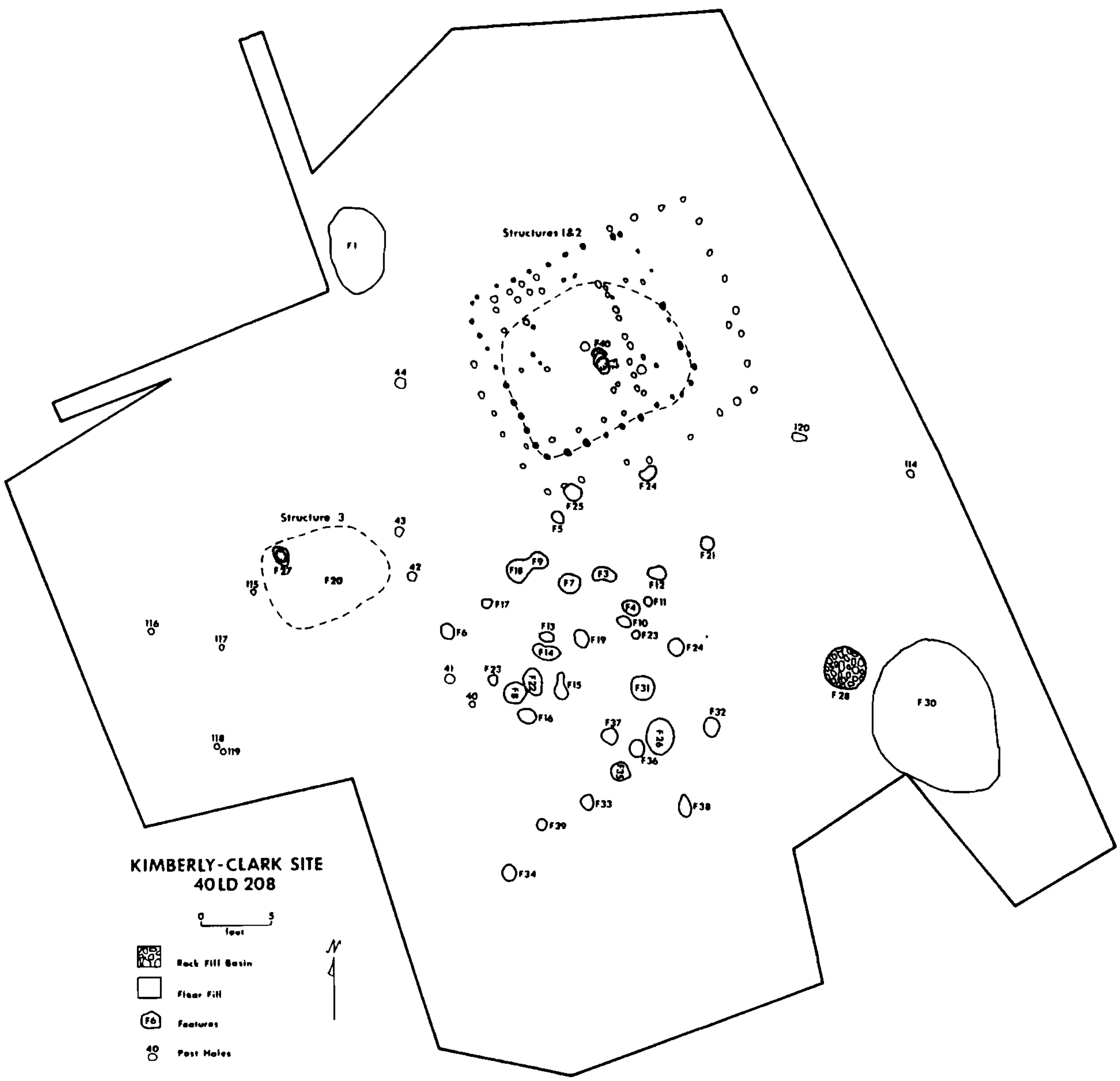

Figure 2. Excavated Area, Kimberly-Clark Site (40LD208), Loudon County, Tennessee.

individuals from the site are from Features 4 and 14, which are, in volume of cremated bone, by far the largest. These included most of the bones of the cranial vault, some facial bones, vertebrae, ribs, scapulae, innominates, phalanges, long bones, and joint surfaces. Whether the many small samples indicate more complete incineration or pre-depositional loss is unknown.

Differential burning was observed in 14 of the cremations. Bundling often results in incomplete incineration of the distal joints and bones not in direct contact with flames. Differential burning may also result from a pyre that is not very hot, or a cremation episode that is short in duration. The thickness of skin and muscle tissue may also affect the burning patterns. Such inferences from these samples remain speculative.

Equally speculative would be conclusions regarding the observed patterns of age and sex. The low number of subadults may be a product of incineration/preservation, considering that five pits contained no bones. Males and females, adults and children within this cemetery are consistent with the egalitarian social structure of hunter-gatherer societies.

Fragments of non-human bone occurred in 13 of the cremation samples. None was identifiable as to genus or recognized as portions of tools or ornaments. Cremated bone pins and a cut animal jaw were found in a Late Archaic redeposited cremation at the nearby Iddins site (Chapman 1981), and animal bones were a constituent in an Early Archaic cremation at Icehouse Bottom (Chapman 1977).

Burned lithic artifacts were present in four burials. Burial 19 contained a heat-broken projectile point, Burials 21 and 22 contained heated biface fragments, and Burial 29 contained a biface fragment and spalls from an exploded biface. The fill in most pits contained an average of 4 chert retouch or small bifacial thinning flakes; only 4 of the total of 93 flakes, however, show evidence of heating. It is possible that the debitage derived from the location of the initial cremations; it is also possible that much of it is associated with the Early Mississippian occupation and was incorporated into the fill through earthworm activity.

There is little evidence to suggest that the Kimberly-Clark site was a focus of occupation during the Late Archaic and the cemetery installation. A single rock-filled basin (F28) may be contemporary. The lack of debitage, fire-cracked rock, and Late Archaic projectile points supports this conclusion. Two Early Archaic projectile points were recovered, but they are ubiquitous on older terrace and upland sites in this area. The Archaic period occupation is quite likely buried within the T1 sediments some 244 meters to the west.

DISCUSSION

Enormous amounts of data on Archaic period assemblages and settlement were recovered during the Tellico Project in the nearby Little Tennessee River valley (cf. Chapman 1985). Burials were, however, virtually lacking in the sites excavated; this is striking, given the areas exposed. Excavated Early Archaic period deposits at five sites totalled 615.5 m^2; Middle Archaic exposure was 328 m^2, and Late Archaic 455.5 m^2. Additionally, over 18 hectares of T2 and T3 sites were stripped of plow zone, exposing Archaic through Historic Cherokee features.

From all of this excavation only eight Archaic burials were encountered—all were redeposited cremations in small shallow basins, essentially identical with those at the Kimberly-Clark site. From Icehouse Bottom there were two from the Early Archaic deposits (Chapman 1977); from the Patrick site was one Late Archaic cremation (Chapman 1977); four Late Archaic cremations were found at the Iddins site (Chapman 1981); and one Late Archaic cremation was found at the Peery I site (Polhemus 1976). One might argue that Archaic flesh inhumations are now lacking from the archaeological record due to soil acidity. However, what is lacking are Archaic period pits that could have served as burial pits for flesh inhumations.

Data on Archaic burials elsewhere in East Tennessee are minimal. Two flexed pit burials were found at the Pittman-Alder site (40MI5) (Faulkner and Graham 1965) along with one at Westmoreland-Barber (40MI11) in Marion County (Faulkner and Graham 1965, 1966). One burial at Phipps Bend (40MW5) is classed as Archaic because of a lack of ceramics in the pit fill (Lafferty 1981).

To go out on a limb, we would propose that at least for the heart of the Great Valley, cremation was the preferred treatment of human remains during the Archaic period. Cremation was an alternative that is evident in a number of Middle and Late Archaic period sites in the Middle South (e.g. Anderson [Dowd 1989], Erwin [Hofman 1985], Eva [Lewis and Lewis 1961], Cherry [Magennis 1977], Pickwick [Webb and DeJarnette 1942]), but always the minority mode among flesh burials. These various mortuary treatments have been interpreted as reflecting differential status during life (Goldstein 1980). Hofman (1985) makes a good argument that among mobile hunters and gatherers, cremation is an option that permits transport of the remains to a preferred place of burial such as seasonal aggregation sites.

This picture does not seem to fit the Tellico data. We certainly have aggregation or base campsites, but where are the burials? The Kimberly-Clark site example and to a lesser extent that of the Iddins site suggest that the burials may be isolated from occupation areas. If the remains of individuals comprised only handfuls of burned bone fragments in small pits, the likelihood of archaeological discovery in off-site areas is remote. Only further archaeological research is going to illuminate this speculation. On the other hand, cremation may have been the only disposal practice among several that permitted remains to enter the archaeological record. If so, we will never fully address the question.

What we do see at the Kimberly-Clark site is the presence of a formal cemetery area isolated from any occupation area. Late Archaic period cremation cemeteries are not uncommon in New England (Dincauze 1975) and the Mid-Atlantic (Regensberg 1970, 1971). In the Midwest, Charles and Bukistra (1983) see the Late Archaic phenomenon of cemetery areas as a ritual affirmation of rights to restricted resources. A cemetery was a means of establishing one's permanent presence and rights in an area. It could also serve as a focus for periodic social intensification activities.

Membership in the corporate unit chosen for burial within the Kimberly-Clark cemetery was not restricted to adults or males and appears to reflect the presumed egalitarian nature of hunter-gatherer societies.

To conclude: the Kimberly-Clark cremations add to our knowledge of Archaic period mortuary practices. These data suggest the possibility of a relatively localized regional practice with considerable time depth. As with so much of the Archaic, only further fieldwork will substantiate our conclusions.

NOTE: This paper was revised for presentation at the 46th Annual Meeting of the Southeastern Archaeological Conference. The complete site report on the investigations at 40LD208 has been published as *Miscellaneous Paper* No. 14 of the Tennessee Anthropological Association.

The support of the Kimberly-Clark Company and Loudon County is gratefully acknowledged.

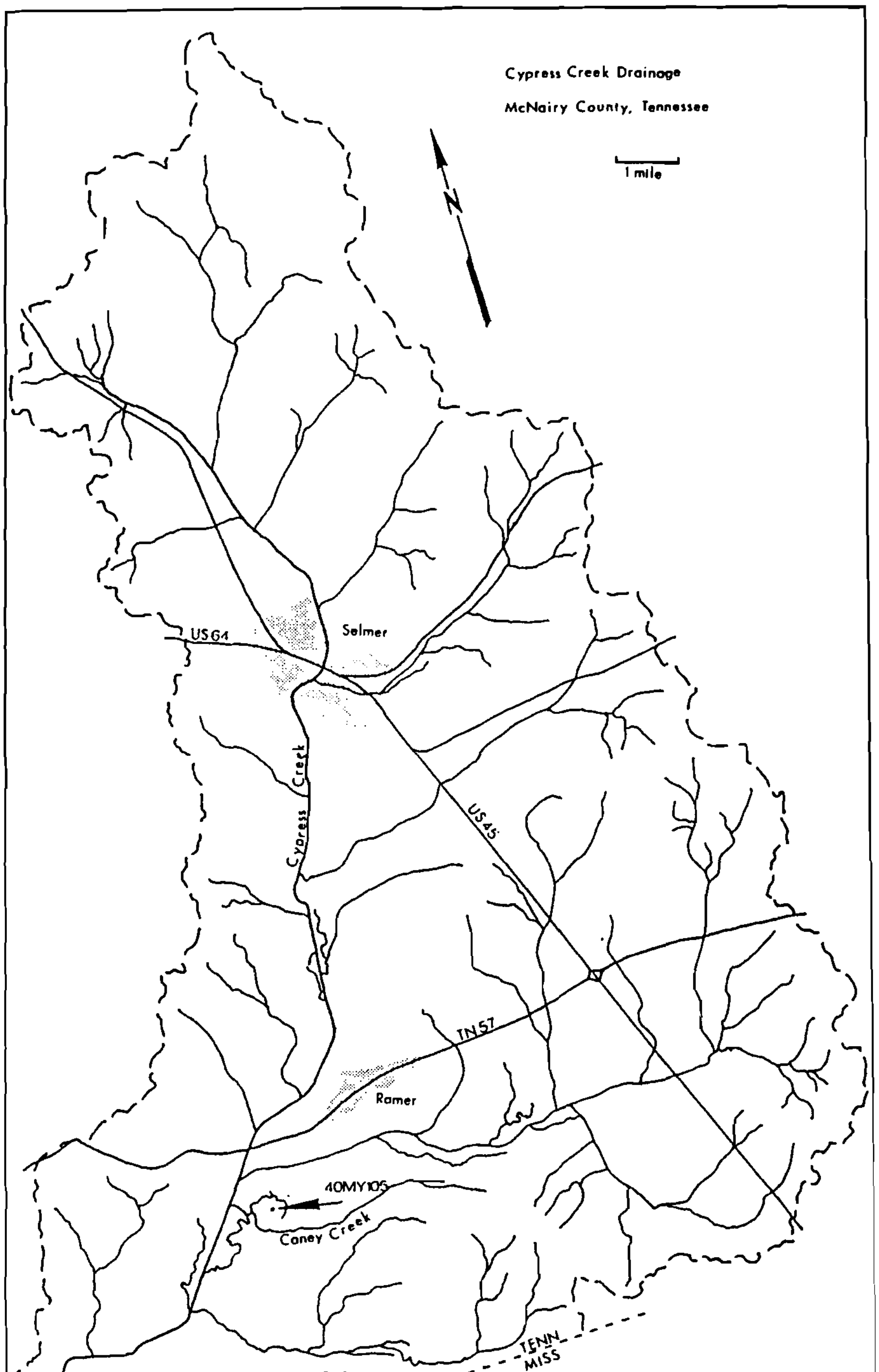

Figure 1. Location of Site 40MY105 on the Cypress Creek Drainage, McNairy County, Tennessee.

6

Limited Testing at site 40MY105: A Multi-Component Accretionary Mound, McNairy County, Tennessee

Shari D. Moore

INTRODUCTION

I was "introduced" to Site 40MY105 in January 1988 by my cousin, Roger Stanfield, who had collected from the site in the 1960s. Examination of the Tennessee site files revealed that this site was as yet unrecorded. There was no information to suggest that it had been mapped or tested. As an individual research project under the supervision of David H. Dye (Memphis State University), I excavated a 1m x 2m test unit on this site. This paper is a report of the results of the project.

SITE LOCATION AND BACKGROUND

Site 40MY105 is located in south-central McNairy County, Tennessee, in the southern part of the Cypress Creek Drainage of Tuscumbia River (Figure 1). The site is an accretionary mound, situated on a terrace crest 400 feet amsl, overlooking a small wetland area. With the assistance of Richard Walling, Tennessee Division of Archaeology, the site was mapped (Figure 2). The tract of land on which the site is located has been owned by the Stanfield family for almost 100 years and has been under cultivation for at least 70 years. Having a desire to preserve and protect the site, the present landowner has not let anyone on it. So, other than the small collection made by his son and having been plowed for several decades, the site has been undisturbed (J. C. Stanfield, personal communication).

In a report submitted to the Soil Conservation Service in 1975, Drexel Peterson briefly describes 59 archaeological sites in the Cypress Creek Drainage, located by various surveys during the early 70s. This is the only area in the county that has been surveyed with any intensity. With only a few exceptions, all reported sites in McNairy County, both prehistoric and historic, are in the Cypress Creek Drainage area.

Thirty sites reported in the Cypress Creek area have at least one Archaic component. Information from the state site files reveals that one site, 40MY99, and possibly two others (40MY5 and 40MY13), have been tested for intact midden deposits. In all cases, no strata were present other than plowzone and subsoil, and no cultural material was recovered below the plowzone. Thus, it would appear that 40MY105

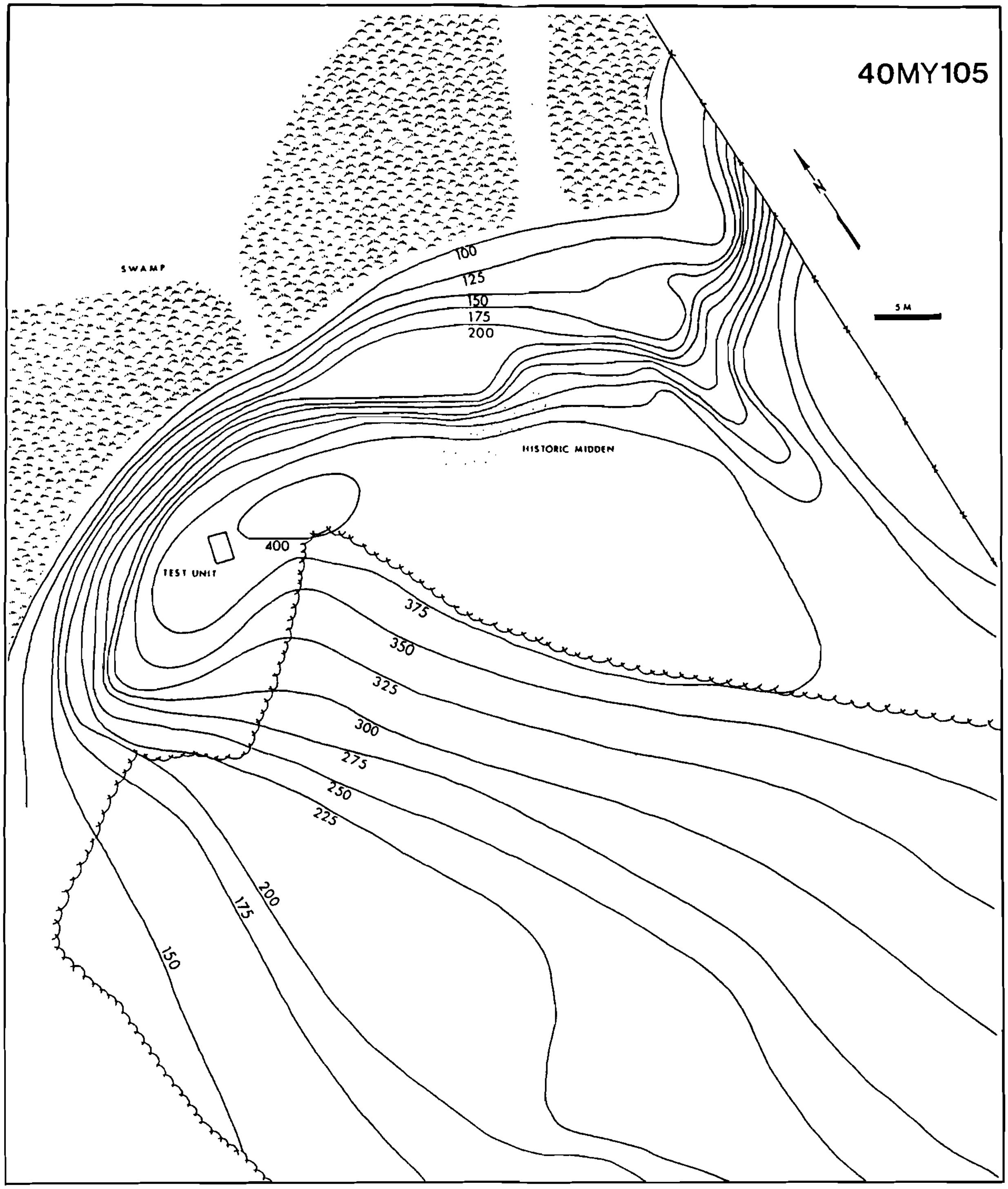

Figure 2. Contour Map of Site 40MY105.

is the first site to be tested in McNairy County which has produced Archaic artifacts in a sub-plowzone context.

TESTING PROCEDURES

At the time the site was tested, site conditions did not permit a controlled surface collection. A 1m x 2m test unit was excavated at the crest of the mound, where random testing with a posthole digger had revealed human remains at the base of the midden deposit. After removal of the plowzone, excavation of the unit proceeded by 10 cm levels. All fill was water-screened through 1/4″ mesh hardware cloth.

FEATURES

Four features were exposed in the unit. Feature 1, a clay hearth, was located in level 2 at a depth of 15.5 cm below surface. It consisted of a thin, circular deposit of sandy, burnt clay. There were no associated burned materials or artifacts. Feature 2, a human burial, appeared at the base of level 2 at a depth of 20.5 cm below ground surface, and continued through level 3. No burial pit was visible. Although bone preservation was generally good, the burial itself was in poor condition, the skull being crushed and all other bones broken into pieces. The individual appears to have been buried either in a seated or perhaps a flexed position. Because the burial was not completely contained within the test unit, burial position was difficult to determine. Examination of dentition revealed six unevenly worn teeth, with the pulp exposed. Apparently the individual was an adult, probably 40 to 60 years old. Due to the incompleteness of the burial, sex determination could not be made. No artifacts were associated. Feature 3, a dog burial, also emerged in level 2 and continued into level 3. The majority of the animal was contained in the unit; it had been buried in a curled up, sleeping position.

Feature 4, another human burial, emerged in level 5 at a depth of 45.5 cm, and continued through level 6 at the bottom of the midden deposit. (This is the same burial located by the posthole diggers prior to excavation.) The burial was complete, partially flexed, and entirely within the test unit. Again, no burial pit could be discerned. The individual was probably a young adult. Dentition was complete and only slightly worn. A mantle of *anculosa* shells covered the entire burial. The shells were ground on one side so that they could be sewn.

CERAMICS

All ceramics were recovered from levels 1 and 2 of the test unit, with the exception of two eroded sherdlets in level three. Sherds were sized by screening through 1/2″ mesh hardware cloth. Those passing through the 1/2″ mesh were designated as 'sherdlets' and not analyzed further. The remaining sherds were sorted into six temper groups, which included fiber, coarse sand, fine sand, limestone, grog, and shell. They were then sorted by surface treatment within these groups and categorized by established type/variety classifications.

The entire sample consists of 49 sherds. Thirty-six sherds were recovered from level 1. Of these, 25 are plain, with the following tempers represented: 7 fiber, 9 coarse sand, 5 fine sand, 1 limestone, 1 grog, and 2 shell. Several additional surface treatments were represented in the level 1 sample: 2 punctated, 2 incised (sand tempered), and 7 fabric impressed (sand tempered).

Level 2 yielded 13 sherds, 8 plain and 5 modified. The plain sherds include 1 fiber, 1 limestone, 1 grog, and 5 shell. The surface treatments represented include 1 punctated and 4 fabric impressed (sand tempered).

The following types and varieties are represented by the sample: fiber tempered—Wheeler Plain, *var. Wheeler*, Wheeler Punctate, *var. unspecified*; sand tempered—Baldwin Plain, *var. Lubbub*, Alexander Incised, *var. unspecified*, Alexander Punctated, *var. unspecified*, Saltillo Fabric Impressed, *var. China Bluff*; grog tempered—Mulberry Creek Plain, *var. unspecified*, Baytown Plain, *var. Tishomingo*; shell tempered—Mississippi Plain, *var. unspecified* (O'Hear, Rafferty, Phillips, and Walling 1985). Thus, the ceramics recovered run the gamut of pottery types from Gulf Formational through Mississippian.

Sherd Distribution by Level			
	Level 1	Level 2	Totals
Fiber tempered:			
Wheeler Plain	7	1	8
Wheeler Punctated	1	1	2
Sand tempered:			
Baldwin Plain	14	—	14
Alexander Incised	2	—	2
Alexander Punctated	1	—	1
Satillo Fabric Impressed	7	4	11
Limestone tempered:			
McKelvey Plain	1	1	2
Grog tempered:			
Mulberry Creek Plain	1	—	1
Baytown Plain	—	1	1
Shell tempered:			
Mississippi Plain	2	5	7
Totals	36	13	49

LITHICS

Six whole and three partial pp/ks were recovered from the excavation unit: three Benton and one Flint Creek from level 1; one Benton and one small, triangular point from level 2; one drill made from a Benton point in level 5; and one Kirk (Cambron and Hulse 1983) from level 6. One bifacial scraper was recovered from level 1.

A cursory examination of flakes reveals that both decortication and biface thinning flakes are present, as well as several retouched, utilized flakes. The number of flakes recovered in each level diminished as the levels descended, probably due, in part, to the effects of plowing in the upper levels.

A fragment of what appears to be a grinding stone was recovered in level 4. It was covered with a thin concretion layer, making use-wear analysis difficult. This was the only ground stone tool recovered.

Flake Distribution by Level							
	L1	L2	L3	L4	L5	L6	Totals
Decortication	11	11	2	2	3	—	29
Biface thinning	20	5	3	3	—	—	31
Interior	114	22	11	9	16	8	180
Utilized	5	—	2	—	1	—	8
Totals	150	38	18	14	20	8	248

BONE ARTIFACTS

One worked bone artifact was recovered from level 3: a section of some type of long bone with a drilled hole at one end. The hole, 1.3 cm in diameter, was originally near the middle of the bone, but one end has been broken off. This artifact is similar to several bone and antler artifacts found at the Eva Site (Lewis and Lewis 1961) and at Site Lu59 in Lauderdale County, Alabama (Webb and DeJarnette 1942).

CONCLUSIONS AND RECOMMENDATIONS

Even at this early stage of investigation, this site demonstrates the potential for good contextual information for both the Early and Middle Archaic periods, as well as Woodland and Mississippian. In addition to further testing of this site, a regional archaeological survey to provide information concerning Archaic settlement patterns would also be useful, because information on prehistoric site distribution is so sparse in this immediate area.

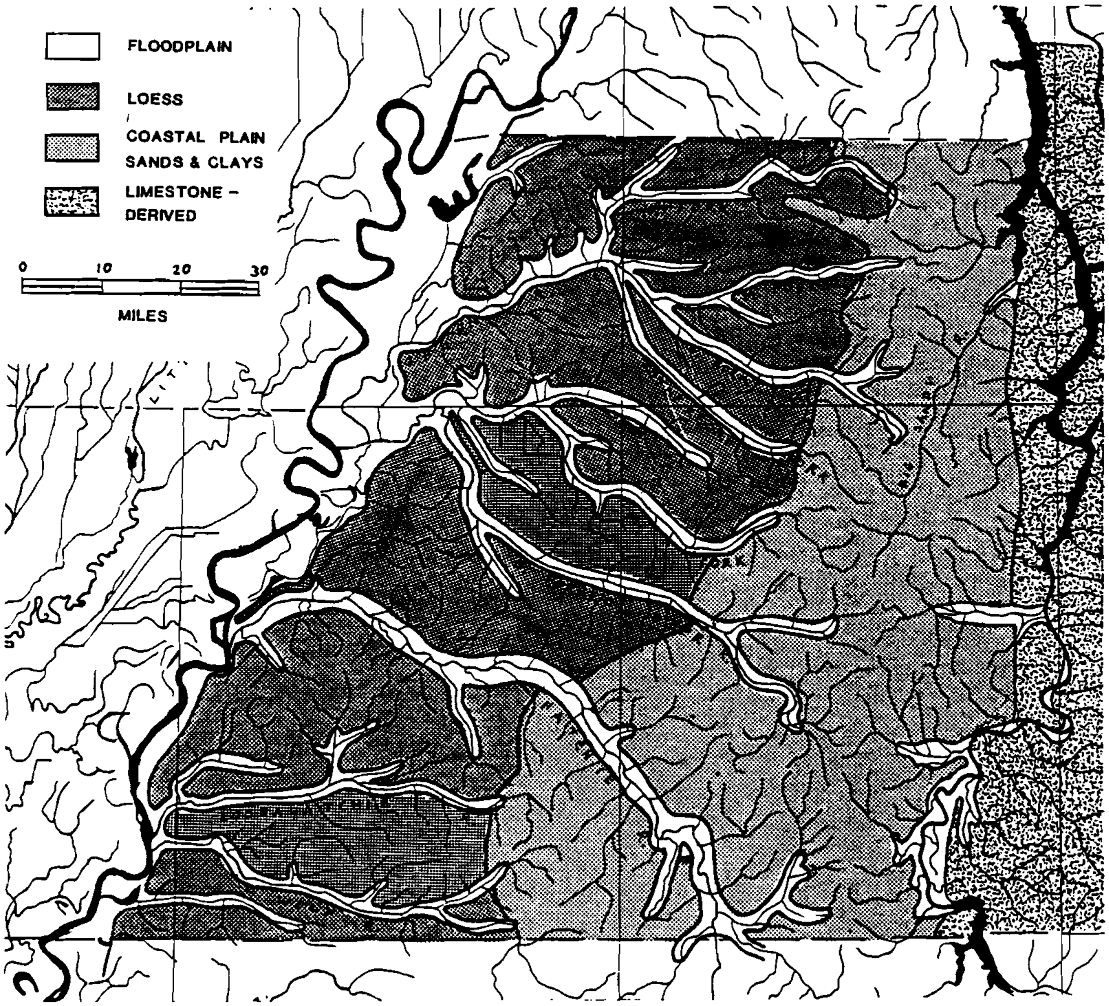

Figure 1. Major Soil Zones in Western Tennessee.

7

The Archaic Period in the Mississippi Drainage of Western Tennessee

Gerald P. Smith

The Archaic cultural period in the Mississippi River drainage of western Tennessee, known primarily from surface collections, has long been felt to conform quite well with the general chronological framework for adjacent portions of the Mid-South. Limited test excavations in the Loosahatchie and Obion drainages (40FY13 and 40GB42, respectively) appear to confirm this.

There are three major ecological zones in the area of concern. From west to east, they are: the narrow Mississippi River floood plain; the loess uplands, covering roughly two-thirds of the area; and the Inner Coastal Plain sands and clays extending from the upper portions of the Mississippi tributaries east to the Tennessee River divide (Figure 1). Floral and faunal resources are broadly similar throughout the region, with soil drainage and seasonal flood conditions acting as primary factors in local variations. A key floral distributional pattern is the modern occurrence of groves of shagbark and scalybark hickory on Grenada soils on low stream terraces in the loess zone (Flowers 1964). This pattern should extend back in time at least to the Altithermal, and perhaps before.

EARLY ARCHAIC (8500-5500 BC)

Early Archaic components are represented primarily by projectile points: Dalton, Big Sandy, Kirk/Palmer variants, occasional Hardins and other types. End scrapers and some unifacial tool types made during the Paleo period appear to have continued in use through part of the period (Goodyear 1982:384). There is not enough information available to attempt definition of phases or settlement patterns.

MIDDLE ARCHAIC (5500-3500 BC)

The Middle Archaic in the study area is even less well known than the Early Archaic. Again, distributions are quite diffuse with respect both to overall area and to ecological zones. Eva points, hallmark of the Tennessee River Middle Archaic, rarely occur more than about 20 miles (34 km) west of the drainage divide. Morrow Mountain points do not seem to occur west of the Tennessee valley.

Cypress Creek II, Eva, and possibly some side-notched forms are the primary types present during the period. Stratigraphic data from Eva (Lewis and Lewis 1961) indicate that Cypress Creek II postdates Eva and predates Benton. The Cypress Creek I points illustrated in Lewis and Lewis Plate 9 look very much like Kirk Corner-Notched, an identity in keeping with their pre-Eva stratigraphic position. Cypress Creek points, in the sense of Cypress Creek II only, occur all the way across western Tennessee to the Mississippi River.

The excavations at Eva also raise serious problems with the traditional chronological placement of side-notched forms. Most occur between the Eva and Benton zones. They are quite variable, but most are termed "Big Sandy," which is normally used for presumed Early Archaic side-notched points. Side-notched points continue into this time period in the Plains and occur in Middle Archaic context at Koster (Cook 1976). There are clearly several side-notched types present in the area, some Early Archaic and others possibly Middle Archaic. Haywood (Smith 1979) is perhaps the most likely of the local, west Tennessee series to be of Middle Archaic age, given its close similarity to Brannon Side-Notched from the Helton Phase at Koster. A few possible Matanzas points are also recorded in western Tennessee as Nonconnah, *var. B* (Smith 1979).

LATE ARCHAIC (3500-1500 BC)

The Late Archaic cultural period is marked by an apparent shift from a rather diffuse economy to one based on harvest-collecting and seasonal transhumance. Increased populations, or at least sharply increased numbers of sites and amounts of material, appear with this period.

Benton points mark the beginning of the period and are common from the Tennessee River valley westward to within a few miles of the Mississippi River bluffs. Apparent gathering camps littered mainly with fragments of ferruginous sandstone grinding tools occur on Grenada and Calloway soils in low stream terrace topographic contexts within the loess soils zone. This environmental setting fits the prescription for the formation of shagbark and scalybark hickory groves (Flowers 1964). Test excavations conducted at 40FY13, in the Loosahatchie drainage, and at 40GB42, in the Obion drainage, revealed Benton components whose midden and pits were heavily laced with charred hickory nut hulls. Smaller hunting camps, littered mainly with chipping debris and cutting tools, are scattered topographically throughout the area. Several varieties of the Benton type can be defined (Smith 1979, 1982), most of whose distributions suggest temporal change rather than variation traceable to geographically separate social entities. The test work at 40FY13 suggests that rectilinear to ovate structures with light pole framing may have been in use there. Flexed burials provisionally attributable to the Benton component by stratigraphy were present at 40GB42. There is no reason to expect temporal extension of Benton material in western Tennessee beyond the generally accepted 3600-3000 BC span recognized in northern Alabama (Futato 1983).

The period between Benton and the arrival of Poverty Point influence in the area is very poorly known. Perhaps the most likely possibilities are represented by the Bartlett and "McIntire, *var. A*" forms (Smith 1979), which have sharply complementary distributions. Bartlett points are present west of a line about 10 miles (17 km) from the Mississippi River bluffs and the "McIntire *var. A*" specimens occur eastward to the Tennessee River valley. Bartlett appears to be a Mississippi River floodplain type also present in northeastern Arkansas and southeastern Missouri. The form I called "McIntire, *var. A*" in 1979 falls into a typological morass of forms which have variously also been included in Webb (Ford and Webb

1956:65-66) or Wade (Ensor 1979), and some could even be viewed as variants of Pickwick. For now it might best be regarded as "none of the above" and treated independently. Johnson and Brookes (1989) present data suggesting that their Tallahatta category, which includes specimens identical to my McIntire, *var. A*, may be partly contemporary with Benton in the Tombigbee drainage.

Complementary distribution of Mississippi Valley and Tennessee Valley types continues into the subsequent time period, with the distribution of Pickwick and Lick Creek points to the north and east of the Poverty Point-derived forms which appear in southwestern Tennessee about 1500-1000 BC.

TERMINAL ARCHAIC (1500-300 BC)

The Terminal Archaic is here viewed as representing the expansion of a frontier version of the Poverty Point culture into western Tennessee (cf. Smith and McNutt 1988). This expansion is characterized by a series of projectile point types (including Pontchartrain, Lambert, and Delhi) and baked clay objects. Pontchartrain points are present in the loess soils zone as far north as the Forked Deer River drainage, but have not yet been found further north in the Mississippi drainage of western Tennessee. Some Pontchartrains are recorded from the headwaters of the South Forked Deer and Hatchie Rivers, but the distribution, forms, and raw materials suggest that they are involved with a separate spread of the style into the Tennessee and Cumberland valleys, rather than coming directly eastward from the Mississippi Valley. Only *var. A* is commonly found in both areas. *Var. Shelby* is common only in the Mississippi drainage, while the Tennessee valley forms are rare or absent in the loess zone of the drainage.

Data from the Nonconnah Creek drainage (Smith and Weinstein 1987) suggest that spherical plain and cylindrical plain baked clay object forms are early there, with biconical plain, ellipsoidal plain, spherical cordmarked, and cane-punctated biscuit-shaped objects appearing after the local demise of the Pontchartrain projectile point style. Distributional data from beyond the geographic range of Pontchartrain confirms the late appearance of the cordmarked, fabric impressed, and cane punctated objects, some of which may even have continued in use into the Early Woodland period. Cylindrical plain objects are so rare outside the Nonconnah Creek drainage as to be of minimal chronological value elsewhere.

Several localized complexes can be defined for the period on the basis of variation in baked clay object and projectile point type frequencies (Figure 2). These are the Nonconnah, in the Nonconnah Creek and Wolf River drainages; Lambert, encompassing the Loosahatchie River drainage; Cane Creek, including the lower Forked Deer drainage and the Mississippi River bottoms and bluffs northward to the junction of Reelfoot Bayou with the Obion River; Reelfoot, including the Reelfoot Bayou/Reelfoot Lake/Reelfoot Creek drainage; Muddy Creek, in the middle Hatchie drainage; Holly Grove, in the lower South Forked Deer drainage; Harris Island, in the South Forked Deer River headwaters; Stokes, in the Middle and North Forked Deer drainage; and Kenton in the uplands of the lower Obion River drainage. The Harris Island, Stokes, Kenton, and Reelfoot complexes all appear to be late, after the end of usage of Pontchartrain points in the area, which was probably on the order of 800 BC according to the compilation of data presented by Webb (1977). Microblades appear in the Nonconnah and Lambert areas, but not beyond. Pickwick points, Lick Creek points, and fiber-tempered sherds appear occasionally on Nonconnah and Lambert complex sites as possible trade items. A description of these complexes is given in the following sections; summaries are provided in Tables 1, 2, and 3.

TYPE VARIETY / COMPLEX	PONTCHARTRAIN				MOTLEY			LAMBERT		DELHI		HARRIS ISLAND							TOTALS
	Shelby	Teoc	A	B	A	B	C	A	B	A	B	A	B	Arlington	Kent	Mulberry Creek	Table Rock	Little Bear Creek	
NONCONNAH	31	5	16	1			10	55		17	6	5	10	3	5				164
LAMBERT	23	2	9	1	1			67	7	31	4	7	16	13	6	3	1	1	192
CANE CREEK	4		2				2	4	2		4		1						19
MUDDY CREEK	1							4					1	1					7
HOLLY GROVE	3		1				3	8	1	8	2	13		4	2				45
HARRIS ISLAND	1	4	1	2				27	5	7		13	7	4					71
STOKES	3	2	3					16	6	3	1	4		4					42
KENTON								5	2	2	1	2	1						13
REELFOOT								2		1			1						4

Table 1. Projectile point types by complex.

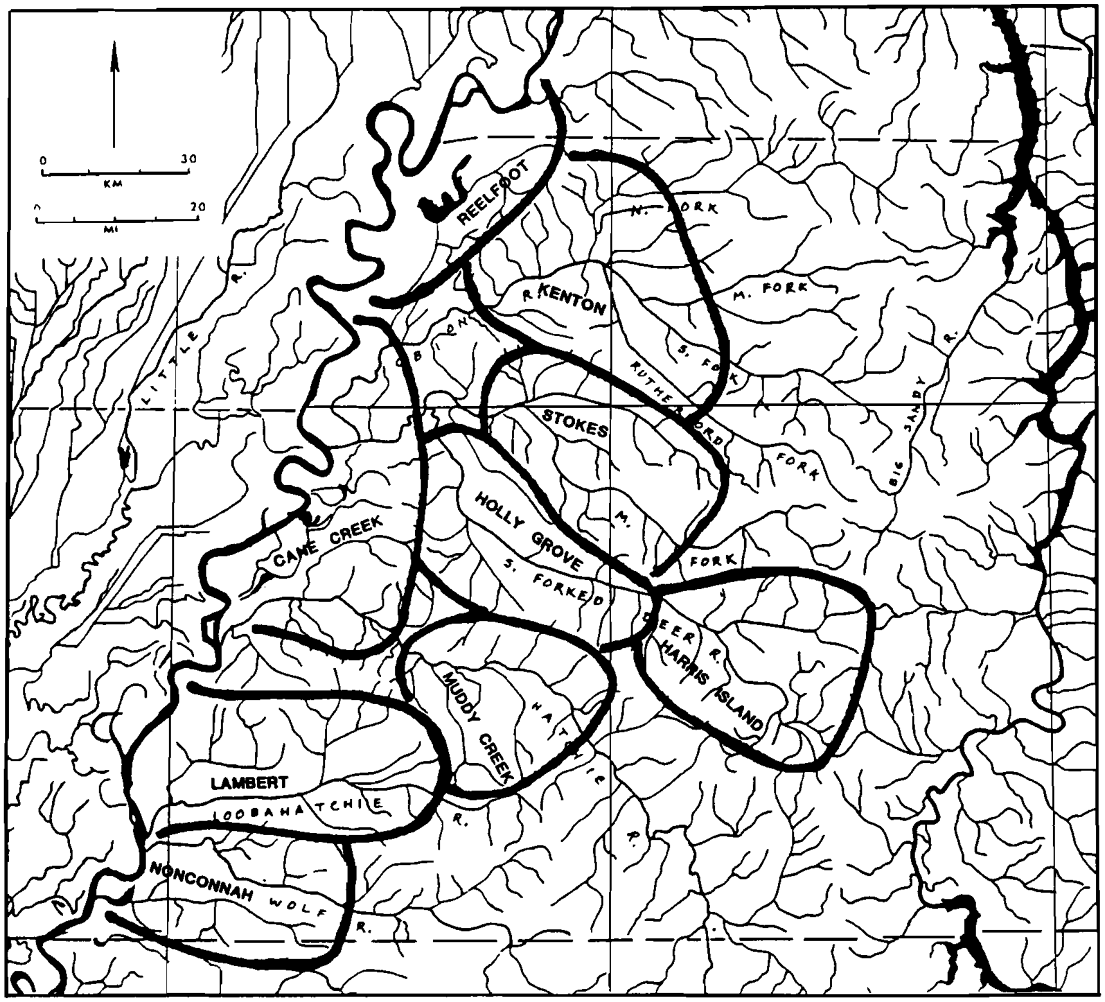

Figure 2. Terminal Archaic Complexes in Western Tennessee.

Nonconnah

Only the Nonconnah Creek drainage, in Shelby County, provides a basis for distinguishing early and late complexes in the territory. The Early Nonconnah complex is definable by cylindrical baked clay objects, and Pontchartrain and Motley, *var. C* points (Smith and Weinstein 1987:36-45). Plain spherical and biconical baked clay objects are the other main types present. The projectile points are primarily Lambert, *var. A* and Pontchartrain, *var. Shelby* and *var. A*. Late Nonconnah components lack the cylindrical baked clay objects and Pontchartrain points, but have biscuit-shaped plain and cane punctated baked clay objects added to the complex along with Arlington and Harris Island points.

Lambert

The Lambert area has by far the highest frequency of spherical plain and lowest frequency of biconical plain baked clay objects of any in western Tennessee. Ellipsoidal, biscuit-shaped, and cylindrical plain baked-clay objects are also present. The projectile point types are primarily Lambert and Delhi, with

Table 2. Baked clay objects, forms/finishes by complex (counts).

FORM	SPHERICAL				BICONICAL				ELLIPSODIAL					
SURFACE / COMPLEX	Plain	Fabric Impressed	Cordmarked	Eroded	Plain	Fabric Impressed	Cordmarked	Eroded	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Eroded
E. NONCONNAH	13		1	13	13			1	3					3
L. NONCONNAH	10			2	4									
LAMBERT	50				6				7		1			
CANE CREEK	6				5				1		2			1
MUDDY CREEK	13				7		2		1					
HOLLY GROVE	28		3		12				4		2			
HARRIS ISLAND	23	6	1		7				14	16				
STOKES	93		10		55				23		1	2	1	
KENTON	14		3		9				1		1	3		2
REELFOOT	18		2	1	5		1		5		8			1

FORM	BISCUIT				CYLINDRICAL			CUBOID			FRAGMENTS							TOTALS	
SURFACE / COMPLEX	Plain	Cane Punctated	Fingertip Punctated	Solid Cylindrical Punctated	Plain	Ridged	Eroded	Plain	Cane Punctated	Scraped	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Scraped	Eroded	Form & Surface Identifiable	All
E. NONCONNAH					29	2	20						2				130	83	252
L. NONCONNAH	1	1									3			4			10	16	35
LAMBERT	3				3						1						39	70	110
CANE CREEK																	11	14	26
MUDDY CREEK																2		23	25
HOLLY GROVE	1	3	1								4		2	1			68	54	129
HARRIS ISLAND											1						34	67	102
STOKES	10	42	10	1				1	4	1	10			21	1		190	253	475
KENTON	3	8	10					1						1	2		25	53	83
REELFOOT	2										2		1				30	41	76

Table 2. (cont.) Baked clay objects, forms/finishes by complex (counts).

Pontchartrain, Harris Island, and Arlington as the main secondary types represented. Test excavations at 40FY13 encountered an apparent Lambert complex hunting camp. A carbon sample from this component yielded a date of 450 BC ± 95 (2400 BP ± 95; I-5782). A postmold pattern from an apparent circular shelter about 2 meters in diameter was also present.

Cane Creek

The Cane Creek area suffers from small collections despite its apparent large extent. Baked clay object types are primarily spherical and biconical plain and ellipsoidal cordmarked. Pontchartrain, Motley, Delhi, Lambert, and Harris Island point types are all represented. It should be noted that until recent times the Forked Deer River flowed southward along the Mississippi River bluffs to join the Mississippi just above the Hatchie, and the Obion entered the Mississippi several miles north of its present mouth. The proposed Cane Creek territory may thus have been centered along the lower Forked Deer rather than straddling the multiple cross-cutting streams present in the area today.

Muddy Creek

Knowledge of this territory is virtually as murky as that of Cane Creek. The baked clay object assemblage is composed primarily of spherical and biconical plain, along with a representation of biconical cordmarked and ellipsoidal plain. Pontchartrain, Lambert, Harris Island, and Arlington point types are represented.

Holly Grove

Holly Grove is part of the group of late complexes which are north of the main Mississippi valley distribution of Pontchartrain points. It is on the apparent former frontier of the complementary distributions of Pontchartrain and Pickwick–Lick Creek–Tennessee River Late Archaic point type distributions. Its baked clay object assemblage is composed of slightly more than half spherical plain, almost a fourth biconical plain, then a variety of decorated/surface textured forms including spherical and ellipsoidal cordmarked and biscuit-shaped cane and fingertip punctated varieties. The projectile point assemblage includes Lambert, Delhi, and Harris Island as primary types, with Arlington, Kent, Motley, and Pontchartrain also present. The complex is unusual in that the Lambert frequency is less than a fourth of the total, rather than being the dominant type.

Harris Island

The Harris Island territory is distinctive in that it is the only one established outside the loess soils zone, in the coastal plain sands and clays. It is also the only area with fabric impressed baked clay objects. Spherical plain, ellipsoidal plain, and ellipsoidal fabric impressed are the main baked clay object types, with spherical fabric impressed, spherical cordmarked, and biconical plain also represented. The primary point types are Lambert and Harris Island, with Delhi, Arlington, and a few apparent Tennessee River-derived Pontchartrains also present.

A possible Harris Island component was present under Mound 12 at Pinson (Mainfort 1980), although the stratum involved also produced large amounts of Early and Middle Woodland ceramics, suggestive of severe mixing in the shallow midden involved.

Stokes

The Stokes complex has by far the best known and most varied assemblage of baked clay objects of any of the western Tennessee complexes. Its primary types are spherical plain, biconical plain, and biscuit-shaped cane punctated. The host of minority types includes spherical cordmarked; ellipsoidal plain, cane punctated, and fingertip punctated; biscuit-shaped plain, fingertip punctated, and solid cylinder punctated; and cuboid plain, cane punctated, and scraped. Half the projectile points are Lamberts, with Pontchartrain, Delhi, Harris Island, and Arlington also present.

Kenton

The Kenton area has the lowest frequency of spherical plain baked clay objects, only 26%. Biconical plain, biscuit-shaped cane punctated, and biscuit-shaped fingertip punctated are the other main types. Spherical cordmarked; ellipsoidal plain, cordmarked, and cane punctated; biscuit-shaped plain; and cuboid plain are all present as minority types. The biscuit-shaped fingertip punctated and ellipsoidal cane punctated types have their highest frequencies in this phase. Lambert, Delhi, and Harris Island are the point types present. A Kenton component was found in test excavations in a deep midden at 40GB42, with 20 cm of non-ceramic deposits under 25 cm of midden containing Early Woodland, Late Woodland, and Late Mississippian ceramics along with baked clay objects. Below the Kenton occupation was a Benton component, in a sharply distinctive dark midden zone.

Reelfoot

The Reelfoot baked clay object assemblage is almost half spherical plain and a fifth ellipsoidal cordmarked. Spherical cordmarked; biconical plain and cordmarked; ellipsoidal plain; and biscuit-shaped plain are present as minority types. Lambert, Delhi, and Harris Island point types are represented.

SUMMARY AND CONCLUSIONS

Our understanding of the Archaic in this area has improved dramatically during the past 25 years, but much work remains to clarify even the major elements of much of the picture. Both Early and Middle Archaic are known only as diffuse point type distributions without any clear concentration or patterning. This in itself implies a generalized hunting and gathering subsistence-settlement system, but tells us nothing more about its nature. Our recognition of these periods is handicapped further by unresolved problems with the side-notched point typology and chronology. We are accustomed to working with multiple stemmed and corner-notched types, but only one or two side-notched types. The broad range of variation in the side-notched forms must be brought under both typological and temporal control if we are to make further significant progress with Early and especially Middle Archaic in the Mid-South.

At variance with some of my colleagues, I have chosen to place Benton at the beginning of Late Archaic rather than the end of Middle Archaic. This is based on the apparent shift with Benton from a diffuse to a more specialized harvest-collecting economy. I have no quarrel with the generally accepted time span or the similarity of Benton point manufacture with Middle Archaic forms; I just consider the change in the subsistence-settlement pattern to be more important. It would be ideal if individual band territories could be defined on the basis of point type varieties, and Benton would be a prime candidate for the effort. In this regard, the casual shift of individuals and nuclear families from band to band among many societies (cf. Anderson 1968; Turnbull 1968) is always frightening. Nonetheless, there is variation

Table 3. Baked clay objects, forms/finishes by complex. (Percentages of identifiable specimens.)

FORM	SPHERICAL					BICONICAL					ELLIPSODIAL				
COMPLEX / SURFACE	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated
E. NONCONNAH	42.1		1.2			15.7					3.6				
L. NONCONNAH	62.5					25.0									
LAMBERT	71.4					8.6					10.0		1.4		
CANE CREEK	42.9					35.7					7.1		14.3		
MUDDY CREEK	56.5					30.4		8.7			4.3				
HOLLY GROVE	51.9		5.6			22.2					7.4		3.7		
HARRIS ISLAND	34.3	8.9	1.5			10.4					20.9	23.9			
STOKES	36.8		3.9			21.7					9.1		0.4	0.8	0.4
KENTON	26.4		5.7			17.0					1.9		1.9	5.7	
REELFOOT	43.9		4.9			12.2		2.4			12.2		19.5		

FORM	BISÇUIT						CYLINDRICAL						CUBOID						COUNT
SURFACE / COMPLEX	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Solid Cyl. Punctated	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fintertip Punctated	Ridged	Plain	Fabric Impressed	Cordmarked	Cane Punctated	Fingertip Punctated	Scraped	
E. NONCONNAH							34.9					2.4							83
L. NONCONNAH	6.3			6.3															16
LAMBERT	4.3						4.3												70
CANE CREEK																			14
MUDDY CREEK																			23
HOLLY GROVE	1.8			5.6	1.8														54
HARRIS ISLAND																			67
STOKES	4.0			16.6	4.0	0.4							0.4			1.6		0.4	253
KENTON	5.7			15.1	18.9								1.9						53
REELFOOT	4.9																		41

Table 3. (cont.) Baked clay objects, forms/finishes by complex. (Percentages of identifiable specimens.)

in Benton forms, and if this variation could be used in conjunction with appropriate ethnographic models (cf. Morse and Morse 1983:80), such a study would be well worth the effort.

The development of a clear dichotomy of cultural traditions between the Mississippi and Tennessee River valleys by Late Archaic probably begins at least in Middle Archaic, but our understanding here is clouded by severe lack of data from the Mississippi valley. Apparent specialization of the Terminal Archaic complexes derived from Poverty Point within localized portions of the loess zone is rather curious economic behavior for hunter-gatherers; this certainly deserves further investigation. Large-scale excavations of some of the numerous partly silted-over midden mounds in the area is sorely needed to bring this and other portions of the western Tennessee cultural sequence into focus as a set of cultural entities, above and beyond the present sequence of point types.

8

Perforated Atlatl Weights in Northeast Arkansas

Dan F. Morse

INTRODUCTION

A number of perforated atlatl weights ("bannerstones") have been recorded in northeast Arkansas (Morse and Morse 1983:Figs. 5.3, 6.3). They are typically made of local materials and were thus probably manufactured locally. Further evidence for this is provided by the discovery of unfinished weights in various stages of manufacture and of stone beads made from the cores of finished weights, also of local materials (Morse and Morse 1983:122).

Called "bannerstones" by many amateur archeologists and relic dealers (Knoblock 1939), these carefully shaped, perforated stone artifacts have been shown through careful excavation to have functioned probably as weights on atlatls or spear throwers (Webb 1946:319-333). The presence of atlatls in the eastern United States has been seemingly confirmed by the recovery of an Illinois Hopewell figurine holding what is almost certainly an atlatl (Griffin *et al.* 1970:Plate 69).

Basic physical attributes of these perforated stone artifacts fit an interpretation of atlatl weight very well. Perforation, with some exceptions, is from one end and even, good for tight mounting on an atlatl handle. The overall shape of the stones suggests stylized or abstracted birds, usually in flight. Weight is almost always less than a pound (450 gm). These attributes do not necessarily prove that the perforated stones are atlatl weights, but together with other evidence they do support such an interpretation, which is eminently more logical than a strictly ceremonial use as a sort of banner. Atlatls were probably used in "first fruits" ceremonies reenacting proper hunting behavior, but that would seem to be the extent of their ceremonial use in segmentary tribal society.

Perforated atlatl weights occur in a variety of shapes. Knoblock (1939) attempted an overall classification of weights which is still depended on today (Kwas 1981). There is little doubt that different shapes have chronological significance. However, unlike projectile points, atlatl weights are rare and most of the known specimens are permanently lost from their original archeological context.

The earliest weights were probably crescent shaped (Chapman 1977:90-92) and may date almost as early as 6000 B.C. A thousand years later, tubular shaped weights were present (Chapman 1977:90-92).

This is similar to the sequence at Eva of bipointed to tubular to prismoidal shapes (Lewis and Lewis 1961:66). Very few if any perforated atlatl weights date after about 2000 B.C. and almost certainly none were made after 1000 B.C. Newer varieties of atlatl weights called "boatstones" and "bird stones" indicate that between 1000 and 2000 B.C. a new style of atlatl became popular in the eastern United States, with the weight attached in a different manner than before. Kwas (1981:153) seems to suggest that "two-hole gorgets" described in many archeological reports were atlatl weights. The term "gorget" needs to be restricted to ornaments, and someone needs to examine Archaic "gorgets" to differentiate between ornaments and bar weights.

Perforated atlatl weights in the eastern United States date between about 6000 and 1000 B.C., a maximum period of 5000 years. Most varieties other than crescent and tubular probably date between about 4000 and 1500 B.C., a very long period of 2500 years. Of those, it would appear that the "winged" forms tend to date the latest (near 1500 B.C.) and prismatic forms somewhat earlier (near 2500 B.C.). It is presently impossible to date perforated atlatl weights more tightly until more investigators are aware of the chronological potential of these artifacts. It is interesting to note, however, that a winged weight, a prismatic weight, and two-hole gorgets occurred in a single burial cache in Illinois (Knoblock 1939:202-205).

Perforated atlatl weights are ground stone artifacts, in contrast to chipped stone artifacts. The distinction between these two categories of stone artifacts is not as obvious as many investigators seem to think. Many ground stone artifacts were manufactured from chipped preforms or blanks. The easiest way to block out a stone blank is to chip it roughly into shape.

In the case of perforated atlatl weights made on cobbles retrieved from gravel deposits, an advantage would have been the capability of selecting a stone already pre-shaped by natural geological forces. Pecking and/or abrasion with proper hammer-stones and abrasive would have sufficed. For instance, specialized hammerstones with abraded surfaces were often used to work ground stone artifacts (Morse and Morse 1983). We are learning a great deal about primitive technology and crafts, but unfortunately many archeologists are not making (and/or not reporting) the physical attribute observation necessary to identify those tools. The obsession in the eastern United States for designating such artifacts as "milling and nutting" stones, "manos," etc. has helped prevent specific interpretations of how atlatl weights were manufactured.

Perforation of atlatl weights evidently was mostly accomplished by the use of a tubular drill and some sort of abrasive material such as sand. A core is often evident on unfinished weights and intact cores were even often made into beads. The tubular drill is evidently the most effective means to drill into certain stones (Cole 1973:114). There is less "rock dust" and, compared to a solid drill-bit, it takes half as much time to make a hole. Drills could be made of wood or even hollow cane. Since the bow and arrow was probably not present in the Central Valley until about A.D. 700, it is doubtful that a bow drill was employed. Drilling an atlatl weight would have been really time consuming.

THE WATKINS SITE

Site 3GE346 (Figure 1) was multi-component. The main component was a one hectare rectangular Mississippian village which dated approximately A.D. 900. The ceramics are similar to what is known as Owls Bend in southeast Missouri (Lynott, Mond, and Price 1984). They are characterized as a plain, flat-based and shell-tempered pottery. Handles are absent and rims are outflaring on jars. A bone harpoon

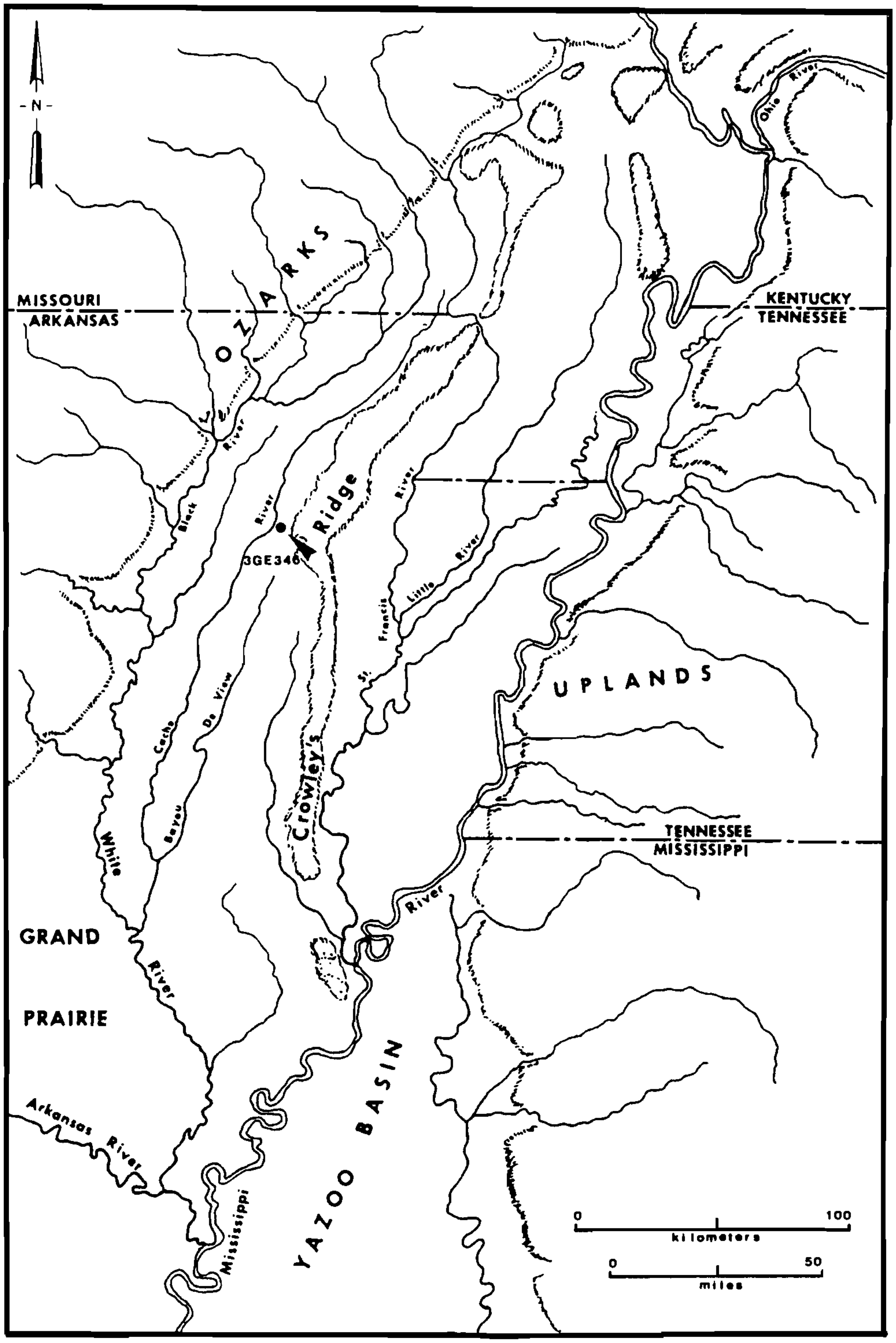

Figure 1. Location of the Watkins Site (3GE346), Greene County, Arkansas.

and interior red filmed Varney-like pottery implies a basic contemporaneity with the Zebree site Big Lake phase component of *circa* A.D. 800-1000. The flat-based pottery shape is in dated context at the Toltec site at about A.D. 900 (Rolingson, personal communication). A second Mississippian component probably dates to about the fourteenth century and was superimposed on the earlier component. Archaic remains were evidenced by secondary deposits in Mississippian storage pits of a few projectile points and by a 0.4 hectare area of considerable surface lithic debris immediately northwest of the Mississippian village complex.

The entire 35 hectare field within which 3GE346 was located was landleveled in early September of 1987. I was first contacted by the Greene County Sheriff's Department due to complaints made to them that human remains were being destroyed. There are no laws in Arkansas protecting unregistered cemeteries, so they hoped perhaps I could do something. Attempts to contact the landowner resulted in a phone call from a university professor who was kin to the owner and worried that I had authority to stop the leveling. I explained that I had no such authority. I was then allowed to contact the owner, who readily gave permission to monitor the site's destruction and who was cooperative after this contact. Evidently he did not relay this agreement to all of the landleveling and farming crew, because some of them deliberately destroyed features while we attempted to record them. Dirt buggies driven by the largest tractors that are made today almost ran down one of the volunteers and narrowly missed me. A levee plow was used to destroy wall trench structures before we could completely record them, for no known reason except to destroy them. Mapping stations were destroyed soon after we established them, but fortunately we had the foresight to tie them into the stationary laser station used to guide the leveling. In approximately 40 years of doing all types of salvage archeology, this project was the least pleasant. Landleveling is the most common and complete Central Mississippi Valley agricultural form of site destruction (Williams 1968; Medford 1972). We concentrated attention on the tenth-century Mississippian village because the landleveling was rapid and dangerous and only a total of four of us were able to work at the site—no more than three and usually two at any given time (Phyllis Morse, Scott Akridge and Danny Moore besides myself).

After the field had been landleveled but before it had been disked, Phyllis Morse and I visited the site to make a surface collection. Visible remnants of the one-hectare Mississippian village and the adjacent Archaic village were small and extremely sparse. The site complex had for all practical purposes been completely destroyed in less than six days. We surface-collected less than a liter of artifacts plus a few larger cobble tools. Later surface collections only resulted in the collection of a very few additional artifacts.

Approximately 250m almost due south of the Archaic scatter and at the edge of what had been a large depression in the field before leveling, I found two unfinished atlatl weights. They were located about 6m apart on a north-south line and obviously had been dumped by a single load of dirt. The final dirt buggy run was clear and both artifacts were located near the eastern edge of that run and almost certainly had constituted part or all of a cache. The run was probed for several meters in a north-south direction with negative results. After disking, the find spot was revisited several times with negative results except for a very few artifacts of common lithic debris. There were probably only two artifacts in the cache. They were probably not associated with a burial, based on the complete absence of human bone in the vicinity of the find. Because of the acid soil conditions, the possibility of such an association cannot be ruled out, however.

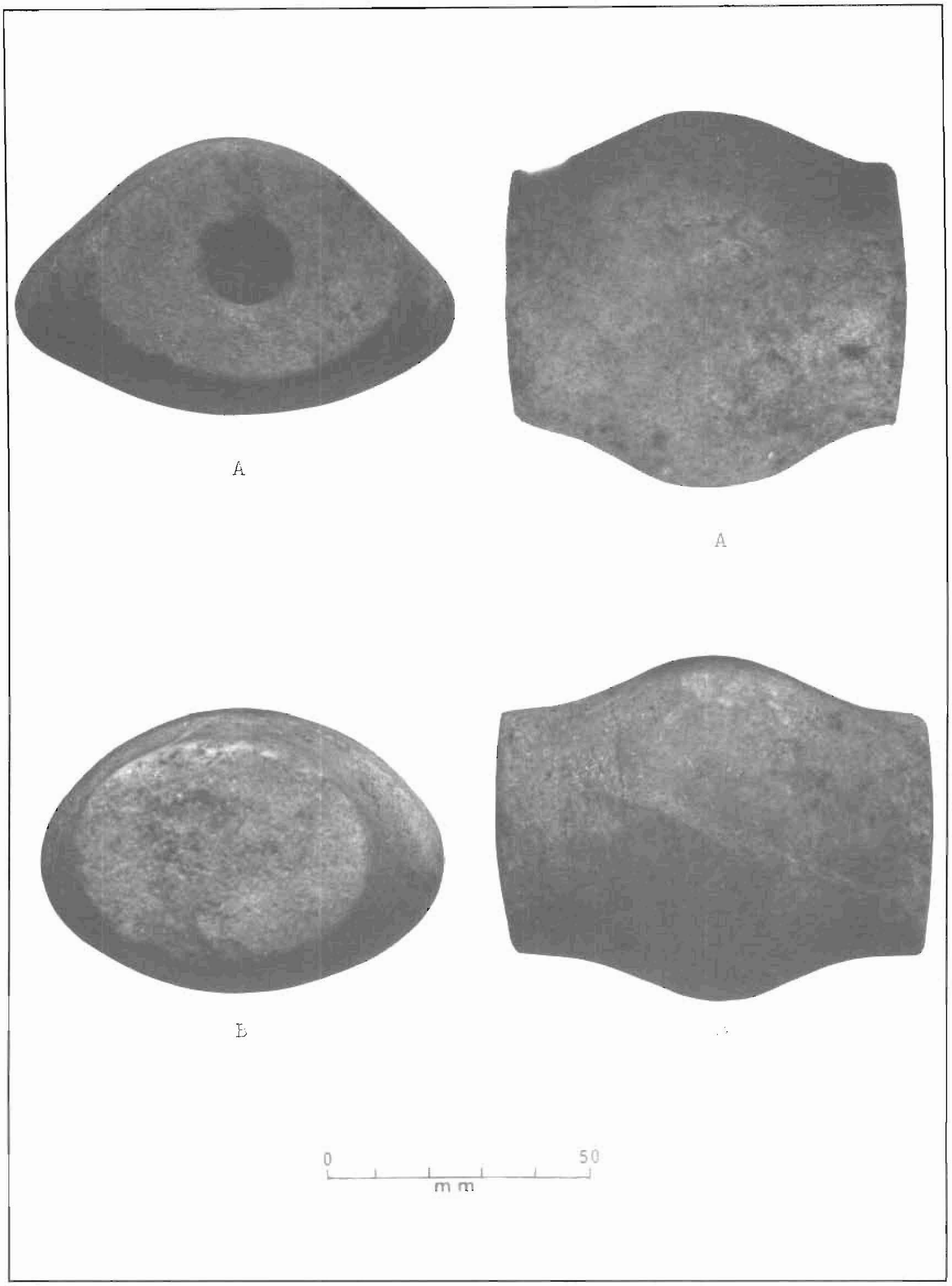

Figure 2. Unfinished Atlatl Weights, Watkins Site (3GE346), Greene County, Arkansas. (A) "Single-face Bottle" type; (B) "Bi-face Bottle" type.

THE ATLATL WEIGHTS

The two unfinished weights are 1) of a "Blending Form" type of the "Southern Tubular Primary Form" gross category (Knoblock 1939:157), known as the "Bi-face Bottle Group" (Knoblock 1939:534-536); and 2) of the "Single-Face Bottle Group," a "Blending Form" within the "Southern Triangular Primary Form" (Knoblock 1939:151, 297-302; see Figure 2A and 2B, respectively.) However, the two weights occurred together, and they undoubtedly constitute slightly different shapes within the same atlatl weight type or category. Shape was essentially achieved before drilling of the perforation commenced.

Both weights are made of quartzite. One is light gray in color and the other a pale brown, based on a cursory check with the Munsell Soil Color Chart. They were undoubtedly made on separate cobbles, probably from Crowley's Ridge, but this origin is by no means certain. The extensions on one are even while those on the other are located off center, toward the same face. Most probably the position of extensions or wings are based on original cobble shape.

One weight is partially perforated. Its perforation varies between 1.30 and 1.35cm in diameter, possibly due to small encrustations on the inside bore. The hole is 3.9cm deep, just over halfway through the length of the stone. The 0.4cm high core left by the tubular drill bit appears to measure about 0.45 cm in diameter. The quartzite probably fragmented as the drilling proceeded.

Both weights are very large, larger than any reported in Knoblock of similar shape. They weigh 393 and 431 gm respectively, the light gray partially perforated weight weighing less than the other. This latter weight measures 7.7 x 7.6 x 4.9 cm in maximum extent. The unperforated weight measures 8.3 x 6.9 x 5.0 cm in maximum extent.

Both weights are well ground. The partially perforated weight is rough on both wing surfaces, while the other weight is rough over part of one end surface. A small edge of this latter surface was broken away by the dirt buggy. There is also a very small fresh chip on the outside edge of the perforated surface.

Based on encrustations, both weights were probably lying essentially flat. The recently chipped edges were up and possibly near each other. Evidently, one dirt buggy just barely touched both weights, possibly dislodging them, and a second dirt buggy (behind the first or on another pass) cleanly picked them up. There is a noticeable, but very slight, diagonal fresh scar on the under surface of the unperforated weight.

POSSIBLE CONCLUSIONS

Two unfinished stone atlatl weights were deposited together. They were probably the entire cache. Both were shaped. The shape is suggestive of a circa 1500 B.C. date. Although classified by Knoblock as two very distinct types, both are probably slight variations within a single type. Only one was partially perforated. Evidently, one person was manufacturing two weights, working on each in alternatively distinct phases. This person used a tubular drill, the most effective method for drilling relatively large and long holes.

One person did not probably "need" two atlatl weights. One or both were probably being manufactured for trade. This is part-time specialist behavior, possibly typical of a "big man" in segementary tribal society (Sahlins 1968:22). This is also behavior typical of the winter village within a seasonal settlement pattern, when exotic artifacts were manufactured (Ray 1963). That could explain why two unfinished weights were cached, as no evidence of a human burial was observed in the vicinity of the discovery site.

Surface collected artifacts can be important even when the archeological context has been destroyed as drastically and completely as at the Watkins site. No other similar discovery of two unfinished atlatl weights has been reported in the eastern United States to my knowledge. Both artifacts were as much fun to discover as to interpret.

9

New Hypotheses for the Demise of the Shell Mound Archaic

Cheryl Claassen

The Shell Mound Archaic is most apparent in the archaeological record of 5500 to 3000 years ago. Shell accumulation appears to have begun 8000 years ago on the Tennessee and Duck rivers in western Tennessee. The phenomenon spread southward along the Tennessee River into the Pickwick area which straddles the Alabama/Tennessee state line (11 mounds) and further upstream into the Wheeler Basin area (4 mounds) by 4000 years ago (Morse 1967:149). It also spread northward into central Kentucky, on the Tennessee River in Marshall County near that river's confluence with the Ohio, on the Green River (36 shell middens and mounds), and on the Ohio River, particularly around the Fall Line and sporadically upriver to the confluence with the Little Miami River. Several more middens appear in West Virginia on the Ohio. Some authors have considered the Archaic period shell middens on the Savannah River, the St. Johns River (Florida), and the Georgia coast also to be expressions of the Shell Mound Archaic phenomenon. I do not, nor do I include the Riverton Culture on the Wabash River. The Shell Mound Archaic as I use it evokes two particular criteria: the mounding of shells and the use of the mounded shell for burial.

Very briefly stated, clues to the culture of the Shell Mound Archaic lifeway consist of subsistence data with plentiful molluscs, their valves usually still paired in the ground, hickory nuts, deer, fish and turtle, thousands of stone and bone artifacts, thin clay bands, fire hearths and pits. No evidence of house structures has been found on the Tennessee or Green rivers. Green River sites have been interpreted variously as base camps, settlements, transient camps, or hunting camps (Winters 1974), occupied either year round (Lewis and Lewis 1961) or seasonally (Rolingson 1967; Marquardt and Watson 1983; Marquardt 1985; Claassen 1985). A distinctive characteristic of sites in this culture is the use of shell mounds for burial of people and dogs, usually flexed, in round graves, and without artifacts. More women than men were sprinkled with red ochre and a significant portion of the few ceremonial grave goods was found with women.

After 4950 b.p. the vigorous development of the Shell Mound Archaic in the Falls of the Ohio region declined rapidly, and that area experienced a sharp drop in population density (Janzen 1977:139). This decline predates that on the Green River (at approximately 3500 b.p.). For unknown reasons, shell accumulation ceased at many of these sites and dozens of shell mounds were capped by shell-free soil transported to them (Stein 1982). For example, shell-free but artifact-rich midden caps the shell mounds of Indian Knoll, Carlston Annis, and DeWeese (Green River); Eva, Big Sandy, and McKelvey (Tennessee River); and Ervin (Duck River). The lack of terminal dates at most of these mounds prevents a precise look at the timing of this cessation—whether the sites were occupied and abandoned sequentially or simultaneously in any one area, whether musseling was abandoned outright or gradually. Recent excavators of Carlston Annis posit an end of shell accumulation there at 3000 years ago (Marquardt and Watson 1983; Marquardt 1985). The Walker Site shell mound on the Tennessee River has a C14 date of 2915±80 b.p. (Dye 1980:96). A simultaneous cessation of shellfishing is implied by those who have speculated that environmental change was the precipitating cause.

Three hypotheses for the cessation of musseling and the Shell Mound Archaic that have appeared in the literature are: 1) human emigration, 2) overexploitation of the mussel population by humans, and 3) environmental change. Perhaps the occupants of the shell mounds moved outside the Green and upper Tennessee River areas. Attributing the cause to overexploitation, Winters suggested the Indian Knoll folks moved onto the Wabash. Why the Wabash River would have been picked demands an answer, as do the differences in the trait lists. I think it is quite significant that the three Wabash River sites excavated yielded no burials and plenty of house remains. The Eva site, Big Sandy site, and Green River folks could have moved into the Pickwick and Wheeler basin communities and continued shellfishing, but just how much shellfishing occurred after the Late Archaic in these two basins is most unclear. Hofman (1986:198) suggests that Eva folks relocated to neighboring shell middens like Cherry.

While it is possible to clean out a mussel bed, it would be virtually impossible to denude an entire river of the mussel fauna through human predation, particularly given seasonal exploitation as demonstrated by a pilot shell seasonality study (Claassen 1986a). (Claassen 1986b contains a fuller discussion of the overexploitation hypothesis.) Given that mussel spat is transported by fish, recovery of the mussel population on any one bed should occur within the lifespan of even an Archaic person, if not more rapidly. If these shell mounds were indeed seasonal encampments placed so as to facilitate shellfishing, why did the groups not relocate elsewhere on these rivers or on neighboring rivers so that they could continue to shellfish?

The environmental changes cited as causal are those associated with the Hypsithermal. The advent of the Hypsithermal with lowered water levels has been cited as the cause of the intensification of shellfishing and the advent of Archaic shell mounds. At the close of the Hypsithermal, it's argued, increased rainfall raised river levels and the rate of water flow, hazardous to both humans and mussels. Increased moisture also enticed people away from rivers to relocate in the uplands.

The arguments for environmental change have identified a relationship between intensive shellfishing and the Hypsithermal (Ahler 1984:546; Anderson and Schuldenrein 1985:709; Lewis and Lewis 1961:20; Milanich and Fairbanks 1980:146; Neusius 1982:75; Styles 1985; Winters 1969:2-5), but that relationship is insufficient as an explanation for the Shell Mound Archaic phenomenon. The climatic changes of the Hypsithermal impacted the entire United States while the intensification of shellfishing occurred only on some rivers in the eastern U.S.—the Pomme de Terre, the Ohio, the Illinois, the Tennessee, the Duck, the Harpeth, the Green, the Savannah, the St. Johns. The phenomenon of mounding freshwater shells was even more localized—the St. Johns and the Duck, where gastropods were mounded, and the Ohio, the Tennessee and the Green, where bivalves and gastropods were mounded. Furthermore, rapid and deep water does not preclude shellfish or their fish hosts. It is precisely the fact that Archaic shell middens do not show up on other rivers that suggests that neither environmental change, population pressure, optimal foraging strategies, nor overexploitation account for either the beginning or end of the Shell Mound Archaic. (Why shell mounds do not occur along the lower Cumberland has been specifically addressed by the Lower Cumberland River Project [Nance 1987].)

Given the serious doubts that can be raised about each of the common hypotheses for the demise of the Shell Mound Archaic, several alternative hypotheses should be considered: 4) Perhaps the residents began discarding shells elsewhere while still living on the mound—but no new mound accumulations began during the Early Woodland in the Green River valley. 5) A new use for shell debris appeared at that time which would have exempted the shell from deposition in the archaeological record. No new use has been found. 6) Perhaps mass die-offs of mussels occurred (discussed in Claassen 1986b). Die-offs are today, however, highly localized episodes that may have a modern origin. If a mass die-off occurred 3000 years ago, why did the Green River mound residents not relocate to another segment of the river or a different river? Or 7) could it be that the role of shells in the social system changed? We have always assumed that the shells themselves had little or no role, simply representing human food debris. Perhaps not. If the shell was collected to create height, perhaps the desired height on the mounds was achieved.

Pondering these hypotheses (as well as others) some years ago, it occurred to me that the ramifications of hypotheses 1, 2, 4, 6, and 7 were the same: the activities of women and children had been impacted (assuming the traditional sex-role stereotyping). What if, instead of the change in women's activities occurring as a result of one of these hypothetical scenarios, a change in women's labor allocation was the cause of the cessation of shell gathering?

The activities of women and children evidently changed with the cessation of the Shell Mound Archaic; if women and children were no longer harvesting mussels, what is it they were doing instead . . . and why? This is a complicated issue. I have proposed elsewhere (Claassen 1985; as has Theler [1985] for prehistoric Wisconsin Indians) that SMA shellfishers were drying molluscan flesh for consumption during winter and spring as well as consuming the flesh fresh at the time of processing. In the course of testing the Carlston Annis mound and in removing a 25 x 25 cm column sample from the DeWeese Mound, both on the Green River, a high percentage of paired valves was encountered. The 5 cm units in the 3 meter long DeWeese column sample contained anywhere from 30% to 100% paired valves. Morse (1967) also commented on the high number of paired valves in the Robinson Mound. Perhaps masses of animals were dumped onto coals, steamed open, and the meats rapidly removed. Empty, but still connected shells, were then gathered up and dumped by the basket load into a common area. The mass of shells then pressed the valves closed and held the shells *in situ*.

If freshwater mussels were being steamed open and then dried for delayed consumption, their absence in the Early Woodland diet of the inhabitants of the Shell Mound Archaic area takes on new significance. Before an easily gathered, highly storable food resource would be dropped from the diet, people must have identified another storable foodstuff offering equal or higher dietary value, or, alternatively, the need for a storable winter/spring food had been obviated.

One activity that would have competed with shellfishing for a woman's time in late summer, when musseling is easiest due to low water, and would have produced a comparable storable foodstuff is the intensive harvest of one or more edible crops. Hence, another hypothesis for the demise of the SMA can be offered: 8) Musseling stopped at the time horticultural activities intensified in this area, approximately 3000 years ago. We lack an adequate quantity of domesticated plant remains from Archaic sites anywhere in the eastern United States, particularly at these shell mounds, to support such an hypothesis, but data continue to accumulate that push the advent of agriculture further back in time. Weighing against this hypothesis is the fact that many groups have carried on the two activities simultaneously in the fall (Claassen 1986a).

If shellfish were collected principally by women and attendant children for food and the largest proportion of the haul was consumed by the collectors themselves, then the cessation of shellfishing could mean that Early Woodland women and children had lost some self-sufficiency, that feeding had become less democratic. Perhaps Early Woodland society replaced some aspects of individual procurement of foodstuffs with communally redistributed foodstuffs. It is also possible that while Archaic society was organized into large groups so that many women living together created a mound of shell, Early Woodland society was highly fragmented over the landscape. With women dispersed, shell debris was dispersed. Shell is highly susceptible to diagenesis in freshwater contexts and shell deposited in low numbers most assuredly has dissolved. (Such a scenario would mean that the shell mounds, with their caps of shell-free midden, were subsequently lived on by an immigrant population.)

But perhaps it is to a change in men's activities that we should look for a cultural cause for the cessation of musseling and shell mound building. The question becomes, what would have caused men in this region to stop shellfishing 3000 years ago? If the shell accumulated primarily as debris from fish bait (used in churning, traps, hooks), gathered by men, which my recent ethnoarchaeological work in the Bahamas has suggested, what would have prompted men to stop collecting shellfish as bait? The possibilities are numerous, but in fact a change in the quantity of fish is not indicated by the Carlston Annis data (Pat Watson, personal communication, 1988). Perhaps a different lure was developed or 9) baited fishing techniques faded in importance around 3000 years ago while non-baited techniques increased in use. Gendering the prehistoric shellfishers as male suggests many new research directions.

CEREMONIALISM USING SHELLS

There remains the possibility that the meat inside the shells was incidental to some use for the shell. An alternative motivation for SMA shellfishing could have been 10) to erect burial mounds of shells, which themselves had symbolic importance and ritual significance. These mounds, then, would constitute the earliest public monuments in the Eastern U.S. Support for this proposition comes from the tremendous number of burials in the shell mounds of the Green River as well as in other SMA shell middens. Bill Marquardt estimates a density of 1.2 bodies per square meter (Patty Jo Watson, personal communication, 1988) in the Carlston Annis mound. Significantly, the association of shells with death and shells with burials is common in prehistoric America.

In the Eastern U.S., the association of shell with human burials is at least 6200 years old, for freshwater shell beads were found in a burial of this date at the Ervin site in Tennessee (Hofman 1986). Throughout the Archaic, and in Middle Woodland times, marine shell ornaments are among the most widely dispersed of all exotic goods, are always the most numerous ornaments, and are repeatedly found in greatest numbers in graves. Marine shell objects are one of the few exotics traded through the Ohio River Valley in Late Woodland times (Ottesen 1979). Mississippian ceremonial use of shells is well known—from dippers for Black Drink to shrouds.

For the Maya, shell also had a complex symbolic role and had probably held these symbolic associations for many generations prior to the Mayan florescence. Thompson (1950) had the following comments on shell symbolism:

> Shells, particularly conch shells, symbolized the earth, the underworld, and the realm of the dead . . . A representation of a shell added to the sun glyph converted it to a symbol for night (Thompson 1950:49).
>
> On monuments, an inverted, conventionalized univalve shell represented south, associated with the death god and the underworld (*ibid*:49, 85, 271).
>
> Conventionalized Oliva shells, and bivalves, sometimes in combination with the representation of a hand, symbolized completion and possibly zero . . . (*ibid*:138)
>
> The idea of completion may have been equivalent to death (*ibid*:186). However, shells were also symbolic of the moon goddess and procreation (*ibid*:133-134; cf. Moholy-Nagy 1963:71-72).

Curiously, at Tikal, Moholy-Nagy found that structure and monument caches, apparently ceremonial in origin, were most often paired bivalves (1963:73).

I give these Mayan examples because I suspect that there was a pan-American symbolism for shells. The freshwater shell mounding found along the St. Johns River, Savannah River, and later, the Wabash River and Widow's Creek area may well reflect some of this symbolism, but the social groups in these areas did not express this symbolism in the same way as did the SMA people or the Maya.

Additional support for the burial mound hypothesis comes from the fact that shell mounds are only one type of Middle and Late Archaic site in the SMA region. Better candidates for base camps than the shell mounds can be found, while there are no better candidates for ceremonial centers. The characterization of mounds like the Eva site as a large village with year round occupation is strained by the data presented (Lewis and Lewis 1961); other mounds with high percentages of paired valves such as Carlston Annis, DeWeese, and Robinson very surely indicate little post-depositional disturbance, because village activities do not preserve shell pairs. Hofman (1986) argues that these mounds served as seasonal aggregation points for a dispersed hunting-gathering population and more specifically were "a preferred burial location" (1986:153). Most notably, "individuals active in reproductive and economic affairs of the aggregate social group" were buried in shell mounds, while younger and older individuals were more frequently found in non-shell sites (Hofman 1986:182).

While it is unlikely that horticulture prevented women from having the time to shellfish, I do agree with Prentice (1986) that horticulture changed religious practices. Among other changes, I suspect that it lessened the symbolic relevance of shell. Prentice asserts that "the adoption of cucurbit gardening by eastern Archaic peoples was accompanied by the adoption of new mythological concepts, of new perceptions of proper human-plant relationships and probably new ideas regarding the life and death relationship (1986:115)". If the ritual items associated with many of the female skeletons at Indian Knoll signify them as shamans, then, following Prentice's logic, the shellfishers among the shamans would be among the first individuals to adopt the new spiritual beliefs and subsistence practices and would thus create powerful stimuli for social change, change away from shell symbolism. (Prentice [1986:113] however, apparently sees the change as having been under the control of men.) Like shells, gourds are a fertility symbol, and cucurbit symbolism may have been substituted for the prior fertility symbolism of shells. Given that this change is ideological and consequently slow to occur, shell mounding was probably abandoned at different times in the region.

Like Hofman (1986), I imagine that these mounds of shell incorporated as the "Shell Mound Archaic" were seasonal aggregation points for dispersed hunter-gatherers/fishers needing to bury valued community members. The families so gathered lived off the mounds, but did discard artifacts and bones on the mounds. We may err in assuming these discarded artifacts are garbage. Shells were then gathered seasonally and ceremoniously for each burial episode so that many of the meats were ignored or were stored for winter use (accounting for the frequent paired valves). Shells in DeWeese, Indian Knoll, and Carlston Annis may even have been brought from elsewhere, since Stein (1982) argues that the Green River in the Big Bend was deep, sluggish, and muddy yet the species found in the sites are riffle/run inhabitants (Patch 1976, Claassen 1985). It was the shell that was valued, to erect monuments and as a burial context for a specific subset of community members, including many women who themselves may have been shellfishers and shamans by virtue of an ideological system that associated shell with value, procreation, and death. I predict that only a subset of these mounds will be found to have been utilized at any one time, and those in close proximity to one another, such as in the Big Bend of the Green River, represent sequential aggregation loci. We can then speak of the Shell Mound Archaic as a culture with a distinct religious expression and easily draw a ring around the geographical area of its practice, which would cross-cut river valleys rather than be contained within them. This particular hypothesis allows us to account for the location and demise of the Shell Mound Archaic. The test implications for the monument hypothesis are many, although its ultimate disproof may be impossible.

Attending to the gender of the shellfishers spawned several of these hypotheses, but in no case, including the fishing hypothesis, is gender the issue for testing. What is at issue is evidence for the proposed activities: fishing strategies, construction of monuments, horticulture. If we are to advance our understanding of the Shell Mound Archaic, extensive radiocarbon dating is called for, extensive sampling is required, and new hypotheses are needed.

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